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Original Articles

HEMOPTYSIS DUE TO TUBERCULOSIS.

A PRELIMINARY STUDY.*

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PHILADELPHIA.

The pathologic etiology should naturally engage our attention first and foremost in a discussion of the subject of hemoptysis dependent on tuberculosis. Broadly speaking, we may subdivide the cases in (a) those occasioned by congestion of the bronchial mucosa and lung texture and (b) those due to ulceration or erosion of vessels, or rupture of miliary aneurisms.

BLEEDING DUE TO PULMONARY CONGESTION.

When hemorrhage takes place before gross lesions are detectable by means of the physical signs or the *x*-ray in tuberculosis, we ascribe them offhand to congestion of the bronchial mucous membrane and of the lung texture. The earliest pathologic changes in this disease are not directly connected with blood vessels, although the adjacent tissues are the seat of inflammatory processes which may manifest a hemorrhagic tendency. The query is pertinent: Can we ascribe the principal hemorrhages of the earlier stages to congestion?

It may be reasonably questioned, as pointed out by Garland, whether in point of intensity the hyperemia of early pulmonary tuberculosis is equal to that of many other acute and chronic diseases of the lungs in which the tendency to free bleeding is decidedly less marked. It is probable that minute areas of necrosis are already in evidence and responsible for these early hemorrhages. At all events, in cases in which hemoptysis appears before the occurrence of any other initial symptoms of pulmonary tuberculosis, the *x*-ray shows the presence of the characteristic opacities, and tubercle bacilli can often be isolated from the sputa during and after the hemorrhage. That a high grade of congestion is a factor, however, is seen from the significant influence exerted by violent or prolonged physical exercise in the production of hemoptysis, both in tuberculous and non-tuberculous subjects.

This brings us at once to a realization of the fact that the heart can not be omitted from consideration in the pathogenesis of hemoptysis due to tuberculosis. As elsewhere remarked,[1] the cases of lung tuberculosis that are associated with chronic valvulitis affecting the mitral segments manifest symptomatic hemoptysis more commonly than the ordinary uncombined type of the disease, thus showing apparently the effects of marked hyperemia. In the congestive bronchitis that attends chronic valvulitis and also that of the collateral septic processes in phthisis, the lumen of the vessels and capillaries is enlarged and this may lead to small hemorrhages, but the usual course is undoubtedly the pulmonary vessels (*vide infra*). The current opinion that the earlier bleedings in the course of pulmonary tuberculosis are dependent on congestion of the bronchial mucous membrane does not rest on secure pathologic grounds. It is to be recollected, however, that high tension in the pulmonary circuit leads inevitably to vascular sclerosis of the pulmonary vessels so that deficient nutrition at length favors leakage and consequent hemoptysis. Now, it is known that the walls of blood vessels are early affected, i. e., weakened by endarteritis in pulmonary tuberculosis; and, "while there are as yet few proteins and the living bacillus plays the chief rôle, the healthy wall of the smaller pulmonary vessels is apt to become invaded and eroded, giving rise to a hemorrhage" (G. Cornet). It is not improbable that hemorrhage may at times proceed from poorly supported capillaries or a want of outside pressure.

HEMOPTYSIS DUE TO ULCERATION OR EROSION OF VESSELS AND RUPTURE OF MILIARY ANEURISMS.

Rasmussen[2] first showed that fatal pulmonary hemorrhage is probably always caused by rupture of an aneurism in a lung vessel. Brown[3] has also emphasized that few, if any, "well authenticated cases of fatal hemoptysis have occurred from rupture of the pulmonary vein or bronchial artery."

The method of growth of the tuberculous granulomata into the caliber of vessels explains satisfactorily how rupture of their walls, with ensuing hemorrhage, may occur, even at a comparatively early stage of the disease. The less frequent occurrence of pulmonary hemorrhage during the advanced stage of tuberculosis is ascribable to endarteritis which is slowly developed, with resulting thickening of the vascular walls, hence offering increased resistance to the invading forces.

R. E. Thompson[4] has long since pointed out that no case of profuse hemorrhage proceeds solely from the bronchial artery. It must be remembered, however, that where there is a general tendency to hemorrhage a portion of the blood may come from the bronchial mucous membrane.

It is especially true in cases that pursue a rapid course or those in which the processes of softening and liquefaction progress rather acutely that bleeding from eroded vessels is most apt to arise. In these instances the vascular walls are not the seat of endarteritis owing to the short duration of the tuberculous process. In the more serious and fatal hemorrhages we may infer the exist-

* Read before the American Climatological Association, May 7, 1907.

1. Edinburgh Med. Jour., 1868.

2. Anders: American Jour. Med. Sciences, Jan., 1902.

3. Ibid., Aug., 1906.

4. Causes and Results of Pulmonary Hemorrhage, Smith, Elder & Co., 1879.

ence of rupture of vessels due to pathologic changes in their walls leading, as a rule, to aneurismal dilatation before the accident occurs. The development of the latter condition is favored by the removal of the tissues which serve as an external support to the vascular walls.

Finally, the dislodgment from quiescent or healed cavities of calcareous masses may be followed by slight hemorrhage, most probably occasioned by the rupture of capillaries.

EXCITING FACTORS.

It is undoubted that in a considerable percentage of cases of pulmonary tuberculosis there is a hemorrhagic tendency, and in such a veritable hemoptysis may be induced by increased pressure in the pulmonary circuit. That hemoptysis may manifest dependence on an hereditary taint is a matter of personal observation; this is especially true of families that show hemorrhagic proclivities. In several cases under my observation, early pulmonary bleedings (i. e., before the physical signs and the *x*-ray gave indications of pathologic changes) were associated with hemorrhage from other mucous outlets as the stomach and nose. Hemoptysis may have, as its exciting factor, an aggravation of the cough. Dobell found that not less than 76 out of a total of 90 cases of hemoptysis were excited by this symptom.

In my cases, muscular exertion, more especially if long continued or combined with fits of passion or mental excitement, has preceded the occurrence of symptomatic hemoptysis in a considerable percentage of cases and it deserves to rank higher as an exciting factor than is generally believed. In these instances we may attribute the leakage to congestion with rupture of diseased vascular walls provoked by exertion. Indeed, in one of my cases a fatal hemorrhage occurred in a female patient, aged 25 years, after a hurried walk to church about a mile distant. Although no postmortem examination was permitted to furnish positive proof, the existence of a small cavity in the apical region of the right lung explained the pathologic cause of the accident.

Franz Stricker made a statistical study of this symptom in relation to tuberculosis covering a period of five years (1890-95) in the Prussian army. The total number of cases admitted to the hospital was 900. In 480 cases the hemorrhage developed without recognizable cause, and, of these, 417 cases (86 per cent.) were certainly or probably tuberculous. Stricker draws the following, among other, conclusions, namely: "That soldiers attacked with hemoptysis without special cause are in at least 86.8 per cent. tuberculous. In the cases in which the hemoptysis follows the special exercises, etc., of military service at least 74.4 per cent. are tuberculous. In the cases which come on during swimming or as a consequence of direct injury to the thorax, about one-half are not associated with tuberculosis."[5] As pointed out by Frick, "so long as a tuberculous subject has not spat blood he is able to persuade himself that he has not consumption, but after he has spat blood he takes it for granted that he has the disease." He continues: "There is really more reason for this popular verdict than we would at first sight think. Blood spitting is undoubtedly, in some cases at least, due to mixed infection and frequently occurs with the breaking down of tissue." Flick, Ravenal and others hold that hemoptysis is generally caused by a secondary infection with the pneumococcus. In many cases, however, exciting factors, if any be at work, are not obvious.

5 Osler. Text-book of Medicine, p. 326.

INCIDENCE.

Hemoptysis is universally held to be a frequent symptom in tuberculosis. According to a table given in the Second Annual Report of the Henry Phipps Institute, it was present at one time or another in 1,130 out of 2,344 cases. In proof of the extreme frequency of the occurrence of hemoptysis, I desire to present certain statistics which include 214 cases from my private case records, 300 from the out-patient department of the Medico-Chirurgical Hospital (covering a period of six years) and 78 from the practice of Dr. A. H. Lowenburg, who is in charge of the dispensary service, making a totality of 589 cases; of these, 169 of the patients, or 28.7 per cent., manifested blood spitting. These cases, however, were not all followed until the death or recovery of the patient; hence the percentage in which hemoptysis occurs at some period throughout the entire course of the disease must be much higher. For example, if we consider only the cases from private practice, numbering 289, the percentage rises immediately from 28.7 to 41.8, but it is to be recollected that even these patients were under observation less than half of their duration; hence, I feel strongly that Osler is probably not far wrong in stating that it is a feature in from 60 to 80 per cent. of all cases of tuberculosis.

AGE AND SEX.

Of 1,084 cases of tuberculosis studied by Thompson, the female sex was found to show greater liability to hemoptysis than the male "in the relation of 65 to 62 per cent." Of the total number in which the sex was given (589 cases), my figures show the following: 1. That the liability to tuberculosis is shown at an earlier period of life in the female than in the male, in the proportion of 10 to 6 before the twentieth year and 7 to 1 prior to the tenth year (Table 1 and Fig. 1). 2. That hemoptysis is manifested earlier in life, probably dependent on increased incidence in the female sex during the first two decades as compared with the male (Table 2 and Fig. 2).

TABLE 1.—AGES BY DECADES AT WHICH TUBERCULOSIS OCCURRED.

	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Males	1	32	154	106	45	12	6	0
Females	4	32	87	61	25	9	2	0
Total	5	64	241	167	70	21	8	0

TABLE 2.—AGES BY DECADES AT WHICH HEMOPTYSIS OCCURRED.

	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Males	0	7	53	40	15	3	2	0
Females	0	11	30	22	10	4	0	0
Total	0	18	83	62	25	7	2	0

My observation and statistical studies go to show that profuse and fatal hemorrhages are somewhat less common in the female than the male sex, although the sexual differences in this respect are less pronounced than certain writers would lead us to believe.

SEASONAL INFLUENCE.

The occurrence of hemoptysis considered in relation to the seasons has been the subject of statistical study. My own figures (Table 3 and Fig. 3) give a summary of 157 cases for each month of the year.

TABLE 3.—SHOWING SEASONAL INFLUENCE ON HEMOPTYSIS.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
11	9	14	19	13	16	14	16	16	8	11	10

A glance at the above figures can not fail to show a seasonal influence on the prevalence of pulmonary hemorrhage. It will be observed that the spring and summer months give the highest coincidence and this is in consonance with accepted opinion regarding the relax-

ing and enervating effects of heat as well as the influence of the marked oscillations of temperature and humidity during the spring months as causative factors. Sudden, extreme changes of weather bring about intercurrent acute bronchitis and an aggravation of the cough which tends to excite bleeding.

Conversely, the months exhibiting a steady, stimulating cold—December, January and February—have a preventive influence, as shown by their smaller numbers. I should add that the above figures concerning the influence of the seasons on pulmonary hemorrhage strongly corroborate the points brought out by Thompson in his statistical inquiry in England, although the latter was not confined to hemoptysis in the course of tuberculosis.

The strong tendency to recurrences of the hemorrhage is shown by my statistical inquiries. Thus of the totality of cases 589, a second outburst occurred in 292, or about 50 per cent. Considered with regard to the stage of the tuberculous process, my figures indicate that in 75 per cent. of the instances hemoptysis appeared in the first and early part of the second stage, or that of softening. In this respect, our collective investigations support the

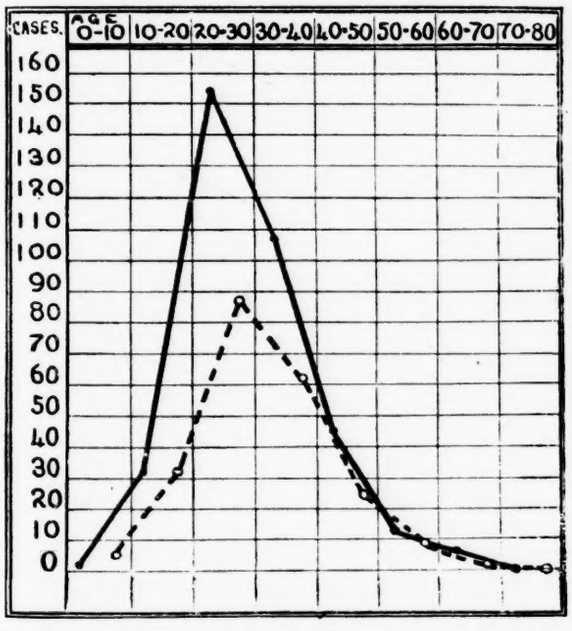

Fig. 1.—Chart based on Table 1 showing sex-ages by decades at which tuberculosis occurred. Solid line indicates males; broken line, females.

views expressed above on the subject of the pathogenesis of the condition.

CLINICAL PECULIARITIES.

We must look on hemoptysis as being the resultant of existing tuberculosis, although neither symptoms nor physical signs may betray the presence of the latter disease prior to the occurrence of the blood spitting. This dictum was originally advanced by Laennec and Louis and later by Traube. Many of these patients have no recurrence and subsequent symptoms of tuberculosis do not develop; such may be regarded as instances of spontaneous arrest or even cure of the affection. Again, hemoptysis is commonly followed by the characteristic evidences of chronic phthisis or it may be after the lapse of months and even years that the rational symptoms and physical signs of lung disease first appear.

Wilson Fox[6] made the interesting observation, which I and others have since confirmed, that hemoptysis, even when considerable in amount, does not seem to exert any influence on the reduction of temperature in the majority of cases at least. Advanced cases sometimes show a fall of some extent, which may last for a period of several days. Now, while in some instances no variations of temperature occur and in a few a slight lowering, it is a well-known thermometric observation that fever and often decided pyrexia develops during and immediately after the blood spitting. Moreover, a moderate depression of temperature may be promptly followed by a notable rise, lasting a number of days.

The explanation of these elevations of temperature offers notable difficulties. When of brief duration they may be occasioned by alarm and demoralization of the patient, as shown by cardiac palpitation, mental agitation and other nervous concomitants. In the case of large hemorrhages which induce marked symptomatic anemia, the ensuing restlessness and febrile disturbance have as an added causative factor the anemia. These traditional explanations for the occurrence of fever, however, need to be further investigated. But the query arises, What new theory can be advanced on rational, clinical and pathologic grounds? May not fever, when a sequel of hemoptysis, be symptomatic of a fresh area of tuberculous inflammation occasioned by the liberation of infective material which is conveyed partly by gravity, but chiefly by aspiration to the surrounding bronchioles and air cells? The daily exacerbations of temperature, sometimes observed for days or even weeks after a hemorrhage, may also, it seems to me, be attributable to localized strictural alterations, which permit the absorption of toxic substances at the seat of the ulceration or erosion. As before stated, the majority of the bleedings occur after secondary infection with the streptococcus has occurred.

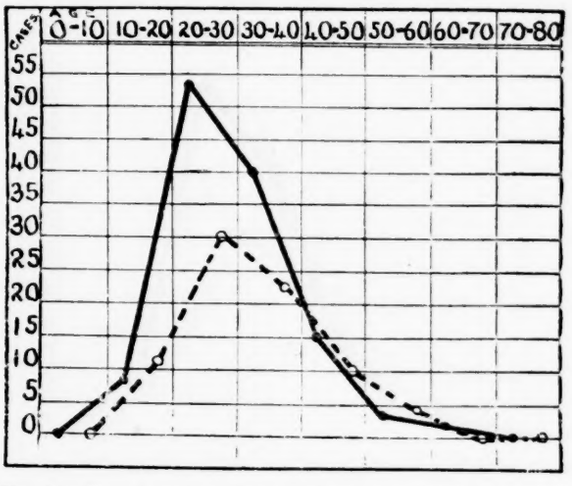

Fig. 2.—Chart based on Table 2 showing sex-ages by decades at which hemoptysis occurred. Solid line indicates males; broken line, females.

I hold it to be exceedingly difficult to determine the source of the blood in a minority of the cases of pulmonary hemorrhage, and in a case seen recently the blood was thought for a time to come from the stomach. The points of detection to be found in text-book literature are: A tickling about the fauces, a saline taste, blood brought into the mouth by the act of coughing, a bright red color appearance, frothy and mixed with mucus. The character of the blood expectorated may not give unfailing proof of its origin, however, and this is espe-

6. Temperature of Phthisis, Medico-Chir., Trans. lvi, 399.

cially true of a sudden, copious, pulmonary hemorrhage. In these cases, the color of the blood may be dark, not having been exposed to the air in the lungs long enough to be changed to arterial brightness. In dubious cases of bleeding of moderate grade, rigid search is to be made for bits of mucus, from which either bacilli or elastic tissue may be isolated. A blood-tinged sputum during the subsequent few days—a common sequel—is a point of great support in hemoptysis and the same is equally true of evidence of pre-existing lung disease.

According to personal observation, it is beyond doubt that there is a form of hemoptysis, which recurs at long and regular intervals of time; this might appropriately be termed recurrent or, since all cases tend to recur, periodic hemoptysis. Although far from common, brief reference should be made to it for prophylactic and therapeutic reasons. It is clear that unusual watchfulness at the time of the expected hemorrhage would be effectual in preventing recurrences. Whether this clinical variety is separated from the usual type either etiologically or pathologically, I am unprepared to state. In the cases observed, the intervals between attacks have

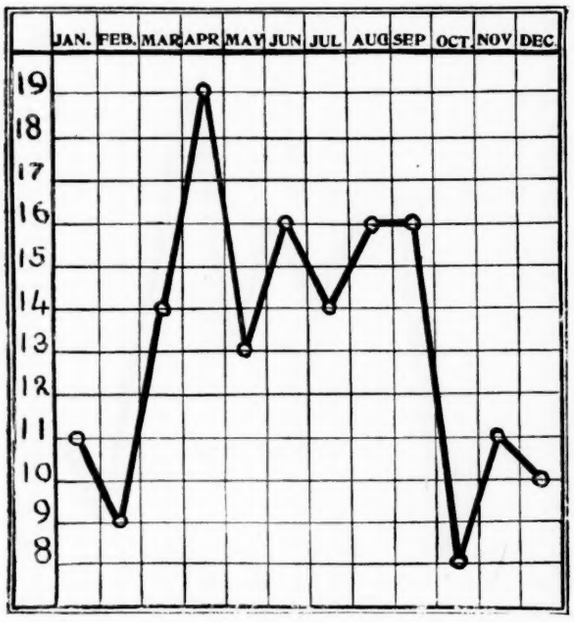

Fig. 3.—Chart based on Table 3 showing seasonal influence on hemoptysis in a total of 157 cases.

been one year, as a rule, and the most favored season, spring. The physical signs of adhesive pleuritis at the base were found in association in two of these cases and the pulmonary lesions slight and practically non-progressive. Indeed, the rather free bleedings were invariably followed by decided improvement which lasted for months together.

SUMMARY OF TREATMENT.

A retrospective view of the various methods of treatment employed during a comparatively brief period of time indicate clearly a notable diversity of opinion on the subject. It must be admitted also that certain well-founded principles and facts are but dimly recognized by the present generation of physicians. For example, the bleeding from the hyperemic lung texture affords decided relief to the local pathologic condition, but more than this symptomatic improvement lasting weeks and months may be a secondary result. Again, the profession has, it seems to me, an imperfect notion of the therapeutic value of absolute rest in this condition, as well as of appropriately restricted feeding, with light, unwarmed articles of diet.

Prophylactic measures of signal importance to the sufferer from hemoptysis are, I fear, systematically and inexcusably neglected by the mass of the profession. The avoidance of undue muscular exertion, of the free use of stimulants and strong mental excitement is to be strenuously enjoined. Certain climatic elements exercise a favoring influence and these are to be adversely considered in making a selection of a suitable habitat for the individual patient. Curtin long since pointed out that a residence far removed from the sea coast is best for patients suffering from hemoptysis, and, further, "that a rarified, but also a cold, dry, aseptic air would be most useful."

The remedial treatment is unsatisfactory and unpromising in view of the fact that, while numerous medicinal agents have been recommended, but few have given reliable evidence of their efficacy. It is in order that we put into force the few whose curative virtues have been proven. Unless there be obvious danger of inundation of the uninvolved lung tissue, as in cases of profuse hemorrhage, the cough should be arrested by the use of codein or, if troublesome, by morphin administered hypodermatically. It is necessary to stop disturbance of the bleeding point by coughing in order to give opportunity for the formation of a clot—Nature's own method of arresting hemorrhage. Hot drinks and alcoholic stimulants, if previously taken, must be intermitted.

My own best results during the early active stage of hemoptysis have been obtained from the strict enforcement of absolute recumbency and quiet, the patient not being allowed to speak aloud nor to put forth any muscular exertion, and an arrest of the cough by codein in the milder forms and morphin hypodermatically in the severer cases. The single contraindication to the use of opium has been pointed out, and if we accept the small class of cases in which it obtains, morphin or opium in some form, rightly administered, is the most serviceable single remedy at our command; its signal virtue, I repeat, being ascribable to the remarkable enhancement of a coagulum at the seat of bleeding. I feel confident that the perils, near and remote, incident to copious or otherwise protracted bleedings can be most successfully obviated by its judicious employment. My earnest plea is for a wider use and closer attention to the practical application of this sovereign agent. The importance of controlling the cough receives striking confirmation from the investigation of Dobell, previously mentioned. J. B. Walker[7] also emphasized the value of opium in the treatment of hemoptysis in a paper read in 1889.

During the first twenty-four or forty-eight hours, according to the size of the hemorrhage, the patient should be kept well under its influence, the object being to stop the cough. Meanwhile the thorax must be carefully and frequently auscultated, and should abundant, moist or bubbling râles be audible over the previously uninvolved portions of the lung—a rare event except in case of rupture of a miliary aneurism—it is to be regarded as a signal for the withdrawal of the opiate.

While the arterial pressure in the lesser circulation is less than in the greater or the arterial system, it is subject to decided variations. The hypertrophy of the right ventricle which develops in the course of pulmonary tuberculosis it is fair to assume maintains an abnor-

7. Treatment, Other Than Climatic, of Hemoptysis in Chronic Pulmonary Disease, Trans. of the Amer. Climatological Assn., 1889.

mally high degree of pressure in the cardiopulmonary arc. This increased pressure may be also brought about by remedies that produce vaso-constriction in the peripheral vessels, such as ergot, and it is most probably accentuated by the forcible action of the heart in consequence of nervous excitation occasionad by hemorrhage. It is clear that a pure cardiac sedative, e. g., aconite, by lowering the tension in the lung vessels, must meet an important indication, and it may be prescribed with much confidence in its efficacy. I have found aconite to be highly serviceable in one-drop doses every third hour; it is especially useful in cases presenting fever. Lawrason Brown[8] suggests "that the blood pressure be frequently observed, that morphin be used when necessary to quiet the patient and so equalize the blood pressure, that sodium nitrite be exhibited to reduce when necessary the blood pressure, and that in case of a sudden hemoptysis amyl nitrite be administered at once when possible, to produce a marked fall in the blood pressure and so aid in a temporary cessation at least of the hemoptysis."

N. A. Johanson[9] states that, in his experience, atropin in doses of gr. 1/50, repeated every twelve hours, has stopped hemorrhage when all other remedies have been of no avail. R. H. Babcock gives an immediate injection of atropin sulphate (gr. 1/50 to 1/25) when hemorrhage occurs from a cavity.

Successful treatment of the case in question must always be preceded by its reference to one of two categories previously mentioned, to-wit: (1) in which the hemoptysis is due to congestion or erosion of the smaller pulmonary vessels (most common); (2) in which there is profuse hemorrhage due to erosion of the larger pulmonary vessels or rupture of a small aneurism (comparatively rare).

The differentiation is greatly aided by remembering that the first class is composed principally of the early-appearing cases, while the second class represents the cases which, in addition to showing profuse hemorrhage, occur at an advanced stage of this disease, as a rule. As stated in other connections in this article, the point of highest importance in the treatment of hemoptysis according to the nature of the lesion producing it is that in profuse hemorrhage proceeding from one of the larger vessels or a ruptured aneurism, the cough is to be encouraged rather than stopped. Opiates are contraindicated.

SYSTEMIC BLASTOMYCOSIS AND COCCIDIOIDAL GRANULOMA.

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INTRODUCTION.

Since the description by Gilchrist in 1894 of blastomycetic dermatitis numerous instances of this infection have been recorded by American observers. The clinical course, the characteristic double-contoured, budding organisms, and the distinctive gross and microscopic anatomy—especially the marked epithelial hyperplasia, the minute epidermal abscesses, and the peculiar granulomatous infiltration of the corium—early established the entity of blastomycetic dermatitis so firmly that denial of its existence, especially by certain German writers, never has received serious notice. H. G. Wells discovered the first case in Chicago, and the large number of cases observed in this city, especially by Professor Hyde and his associates, is noteworthy. Whether this apparent relative frequency of the disease here is in any way due to accidental conditions or to our being in the midst of an especially heavily infested territory remains to be seen.

The interest in blastomycetic infection enlarged when it became known that this infection may be systemic. Since 1902, when J. W. Walker and F. H. Montgomery reported the first case, nine cases of systemic blastomycosis have been reported from Chicago and its vicinity, and it is my purpose in this short communication to present in summary form the essential facts concerning these and certain other cases and to make certain comparisons with the so-called coccidioidal granuloma of California. Busse's well-known case of "saccharomycosis hominis," reported in 1894, and studied also by Buschke, clearly resembles, in many important details the cases reported from Chicago under the general name of systemic or generalized blastomycosis, and it is therefore placed first in the tabular summary. Curtis' case of human saccharomycosis also appears to belong to this group, and is therefore included in the list.

SUMMARY OF RECORDED CASES OF SYSTEMIC BLASTOMYCOSIS.

1. BUSSE-BUSCHKE (Busse, *Virchow's Archiv*, 1896, cxliv, 360; Die Hefen als Krankheitserregen, 1897; Buschke, Die Hefemykosen bei Menschen und Tieren, *Volkmann's Sammlung klin. Vorträge*, No. 218, 1898; Buschke, Die Blastomykose, 1902.): Woman, aged 31, housewife, born and lived in Germany.

Onset and Course of Disease.—Soft tumor below the knee containing glairy, reddish fluid; later disease extended to knee joint; abscess near elbow, also in left sixth rib; according to Buschke, ulcers, sometimes healing spontaneously, would appear on neck and forehead previously to development of tibial abscess. Busse describes ulcers on face as small and round with raised borders; coalescence formed larger sensitive ulcers; subcutaneous foci would form ulcers. Death.

External Lesions.—Borders of cutaneous ulcers sharp, irregular, undermined and infiltrated, surrounded by livid zone; bases composed of soft granulation tissue; numerous double-contoured parasites, often budding, in sections which on surface showed fibrin, polymorphonuclear leucocytes and red corpuscles, and a little deeper, giant cells, leucocytes, and small abscesses; epithelium either destroyed or proliferating.

Internal Lesions.—Abscesses in the right ulna, tibia, left sixth rib; abscesses and minute nodules in lungs, left kidney and spleen. No tubercle bacilli.

Microbiology.—Beginning cutaneous ulcers covered by crust, always gave pure culture of fungus. Pure cultures from abscesses in ulna and rib and from certain skin lesions, the organism proliferating chiefly by budding; Buschke, however, speaks of mycelium with cornidia; no endospores. Fungus not found in urine during life, but eight weeks before death a pure culture was obtained from the left median vein (Buschke). Organism virulent for dogs, rabbits, guinea-pigs, cats, white mice, causing inflammatory changes, the multiplication being by budding. Alcohol and carbon dioxid produced in grape sugar solution. Typical ulcers produced experimentally on skin of patient by rubbing in pure cultures (Buschke).

2. CURTIS (*Ann. de l'Inst. Pasteur*, 1896, x, 448): Male, aged 20.

Onset and Course.—Tumors in various parts of trunk, neck and extremities arising in the course of a few months. Death presumably from internal growths or meningitis after one and one-fourth years. No autopsy.

External Lesions.—Skin in places intact, in places ulcerated over tumors or abscesses, some of which were soft, others firm. Tumors composed almost wholly of organisms, intracellular and extracellular, the latter often double-contoured.

Microbiology.—Cultures obtained with which could be produced in white rats growths resembling those in the patient as well as disseminated internal nodules. No sporulating forms.

3. J. W. WALKER AND F. H. MONTGOMERY (F. H. Montgomery, *Jour. Cut. Dis.*, 1901, xix, 26; J. W. Walker and F. H. Montgomery, THE JOURNAL A. M. A., 1902, xxxviii, 867): Man, 33 years old, resident of Chicago, carpenter.

Onset and Course.—Seven years before coming under observation pimple developed in skin of right shoulder following irritation and scratching; crusting and slow increase in size up to about silver dollar when stationary for years, then growth again particularly between scapulas. Recurring attacks of chills and fever lasting a few days, with signs of pulmonary involvement began 43 days before death, soon after curetting of original lesion. During this period lesions occurred under the right eye, in left temple, and in back. Lesions at first subepidermal, elevated, red, semiglobular, later epidermis fell off, leaving deep red surfaces soon assuming verrucous appearance. Emaciation, dyspnea, death. Diagnosis: Miliary tuberculosis.

External Lesions.—Original lesion raised, firm, well-defined, surfaces in places smooth, cicatricial, in others warty. Microscopically cellular infiltration in the corium with minute focal accumulations, epithelial proliferation, giant cells, and double-contoured, large organisms.

8. Amer. Jour. Med. Sci., August, 1906.
9. Denver Med. Times and Utah Med. Jour., June, 1906.

Internal Lesions.—Lungs, liver, spleen and kidney studded with numerous small nodules at first regarded as tubercles, but further study showed numerous typical blastomycetes.

Microbiology.—No cultures. Blastomycetes in lesions. No tubercle bacilli in sputum. Montgomery after long search found a few bacilli like tubercle bacilli in small abscess in skin near surface. Guinea-pig survived many inoculations

4. GILCHRIST (*Brit. Med. Jour.*, 1902, ii, 1321): Man, 28 years old, negro.

Onset and Course.—In July, 1897, a small pimple appeared on abdomen which became "raw and red" and grew; a month later a second pimple appeared in right loin and followed same course. No attempt at healing. About 4 years later swellings appeared in right breast and right groin, both rupturing in a short time with discharge of mucoid pus; also fluctuating swelling at right of lower end of spine and swelling in axilla. Temperature 99-101.5 F. "Practically cured" in 6 weeks by 30 grains of potassium iodid three times a day. Gilchrist regards this case as one in which the disease just began to become generalized.

External Lesions.—Over right half of abdomen superficial ulcer, 9x16 cm.; second ulcer, 8x14 cm., extending over back from near right margin of the first; edges raised, smooth, with miliary abscesses, base papillary. Typical features of blastomycetic dermatitis in sections of ulcers.

Microbiology.—Pure cultures of blastomycetes (white mycelial growth with aërial hyphæ) obtained from unbroken abscess in back, from swellings at right nipple and in right axilla. Smears from different lesions showed blastomycetes, but cultures were contaminated. Blood sterile. In sections organisms about 1 micron in diameter. Tuberculoid nodules in lungs of dog injected intravenously with pus from unbroken abscess.

5. ORMSBY AND MILLER (*Jour. Cut. Dis.*, 1903, xxi, 121); OTIS AND EVANS (THE JOURNAL *A. M. A.*, 1903, xli, 1075): Man, 56, Swedish by birth, machinist, living in Chicago (?).

Onset and Course.—"Cold in chest" in April, 1902, followed by cough and bloody sputum. In June swelling of skin of thigh leading to discharge and ulcer. In July lesion of nose. Emaciation and weakness. October 8 nodules on arms and legs; 7 days later new crop. Lesions at onset painless nodules in which softening, often rapid, took place, with necrosis of skin and bloody purulent discharge. At one time 93 external lesions were counted. Fever. Lungs solid in places, but no tubercle bacilli in sputum. Laryngitis, purulent conjunctivitis. Death Dec. 4, 1902, body then practically covered with sores and swellings.

External Lesions.—Lesions situated mostly on posterior and internal aspects of legs; also on feet, thighs, upper extremities, scalp, face, chest, buttocks. Ulcers have irregular edges and necrotic floors with black crust. On dorsum of hand the only typical curonic blastomycetic ulcer. Microscopically, a deep nodule consists of enormous numbers of blastomycetes, often in groups, with leucocytes, red corpuscles, plasma, mast and connective tissue cells, as well as giant cells, commonly filled with organisms.

Internal Lesions.—Fibrous and fibrinous pleuritis with whitish nodules; four circular ulcers with smooth borders on epiglottis and larynx. Grayish or yellowish white nodules of varying size, liver, kidneys, pancreas, trachea, larynx—all containing characteristic organisms "in immense numbers." Center of nodules sometimes necrotic. Elastic tissue absent. Numerous and large giant cells with organisms. Parasites seen in blood vessel in kidney and in peribronchial lymph node. Lymph nodes otherwise free. Brain not examined.

Microbiology.—Remarkably large numbers of blastomycetes in lesions, especially pulmonary. Pure cultures obtained readily from various places during life and after death. Organism virulent for guinea-pigs and rabbits; in guinea-pigs local ulcers with pin head gray foci; in internal organs infarcts and small foci containing organism in pure growth. In this case thorough search for tuberculosis with negative result (tuberculin reaction absent, no bacilli demonstrated, no tuberculosis in inoculated animals). During necropsy an accidental inoculation of the skin of a participant took place followed by typical local blastomycetic ulcer.

6. CLEARY (*Trans. Chic. Path. Soc.*, 1904, v, 105; *Medicine*, 1904, x, 818): Man, 23 years old, Italian by birth, resident in Chicago.

Onset and Course.—Cough, mucopurulent expectoration, diarrhea, loss in weight during winter of 1903. Discharging sinus at right sterno-clavicular junction; albumin and casts in urine; no fever while under observation; edema of legs; signs suspicious of disease of apex of right lung; spleen palpable. Death June 4, 1903.

External Lesions.—None.

Internal Lesions.—Numerous gray and yellow areas, 2-4 mm. in diameter, with soft centers in both lungs, more in left; also, though smaller and less numerous, in kidneys, liver and adrenals, and microscopic foci in spleen and myocardium. Blastomycetes either free or within the giant cells, in all such nodules examined and surrounded by leucocytes and other cells. The center of the nodules commonly necrotic. Sinus in neck connected with small abscess. Amyloid in spleen, kidneys and adrenals. Chronic nephritis; bronchitis; edema of legs. Brain not examined.

Microbiology.—Typical blastomycetes, often within giant cells, but rarely seen in necrotic areas; blastomycetes in bronchioles. No cultures. Nothing said as to tubercle bacilli.

7. EISENDRATH AND ORMSBY (*Ill. Med. Jour.*, 1905, viii, 454; and THE JOURNAL A. M. A., 1905, xlv, 1045); final report by LE COUNT AND MYERS (*Jour. Infect. Dis.*, 1907, iv, 187): Man, 33, Polish by birth, resident in Chicago, laborer.

Onset and Course.—Preceded by some discomfort in chest (February, 1904); external lesions began to appear in quick succession in June, 1904. When seen on Feb. 5, 1905, he was thin, pale, weak and feverish, with edema of the extremities, albumin and casts in urine, clubbed nails, dulness and bronchial breathing over right upper lobe. Blastomycetes in sputum. Under iodid of potassium internally and dressings local improvement took place, followed by relapse on abandonment of treatment. In September, 1905, symptoms of dorsal spondylitis developed, and in March, 1906, pus began to escape from the gibbus. Involuntary passages, anchylosis, eventually bloody and mucopurulent diarrhea became constant, budding organisms occurring in feces. Death in convulsions Aug. 23, 1906.

External Lesions.—Superficial, partly encrusted ulcerations with elevated edges, containing a few minute abscesses, on the legs; on the face similar lesions but more papillomatous; subcutaneous nodules on forearms and infiltrations with pus. Lesions characterized by epidermal hyperplasia, minute abscesses and numerous giant cells enclosing blastomycetes.

Internal Lesions.—Blastomycotic bronchopneumonia; blastomycosis of the peribronchial lymph nodes, of the pleura, retropharyngeal tissue, liver, kidneys, colon (no organisms found in peculiar nodules in colon), dorsal vertebræ, external spinal dura (with compression of cord), cerebellum, left elbow, both knee and ankle joints, of the skin and subcutaneous tissue with ulcerations, fistulæ and scars; fibrous induration at root of right lung. Area in cerebellum resembled large "solitary tubercle," but with more softening than usual in tuberculous brain foci and with abundant blastomycetes. Nodules in peribronchial lymph nodes and elsewhere possessed minute abscesses and necrotic areas, numerous giant cells and organisms.

Microbiology.—Blastomycetes present in pure cultures in pus; present also in sputum and in ulcers. Cultures of blood and urine sterile. No tuberculosis in guinea-pigs injected with purulent matter. Numerous blastomycetes in sections of lesions and in mass in cerebellum sporulating forms.

8. BASSOE (*Jour. Infect. Dis.*, 1906, iii, 91): Male, 17 years, born and living in Chicago.

Onset and Course.—Swelling in right scapular region since injury from fall in March, 1904. For some time previous pain in lumbar region and gnawing sensations in right upper lung with cough, night sweats and loss of weight. In July, 1904, abscess over right scapula emptied; again, in August when 500 c.c. of pus were evacuated from right lumbar region. Daily fever. Leucocytosis. Blastomycetes in sputum and in pus. Diarrhea. Albumin and casts in urine. Edema. Death June 27, 1905.

No typical cutaneous lesions.

Internal Lesions.—Chronic subcutaneous blastomycetic abscesses in right scapular region and loin; abscess and sinus walls made up of vascular granulation tissue rich in polymorphonuclear leucocytes, mast cells and blastomycetes. Blastomycotic caries of fourth and fifth lumbar vertebræ, with bilateral psoas abscesses, with blastomycetes in giant cells. Disseminated blastomycotic bronchopneumonic foci in both lungs. Areas of necrosis with Langerhans giant cells in the mediastinal glands, but no tubercle bacilli demonstrable. Amyloid degeneration of spleen, liver, adrenals retroperitoneal, mesenteric and mediastinal lymph nodes, kidneys and colon. Bilateral fibrinous pleuritis and mild serofibrinous peritonitis. Chronic parenchymatous nephritis. Atrophy of the heart. Pulmonary edema. Edema of feet and thighs. Trigolysis of ganglion cells of cerebral cortex and ventral horns of the cord (only upper cervical portions of latter examined). Only few giant cells in lungs.

Microbiology.—Pure cultures of blastomycetes from pus during life. After death cultures failed to yield blastomycetes, though organisms were present numerously in bronchial pus, pus from vertebræ and sinus. Colon bacillus and staphylococcus obtained from various organs after death as well as other bacteria. No tubercle bacilli found in sections from lung after careful search.[1]

9. IRONS AND GRAHAM (*Jour. Infect. Dis.*, 1906, iii, 666): Male, 47 years, German by birth, resident in Chicago, lumberman.

Onset and Course.—In March, 1905, nodule on right thigh, which "broke" and healed slowly with ulceration. Soon other similar lesions on forehead and extremities. Weakness, slight fever, swelling of ankles. When first seen (September, 1905) numerous healed and partially healed superficial lesions, resembling blastomycetic dermatitis, as well as subcutaneous abscesses. Soon cough set in with dulness and râles over lungs and appearance of blastomycetes, but no tubercle bacilli in mucopurulent, occasionally blood stained sputum. New external lesions with sloughing, extensive dissection, even denudation of bone, increasing anemia, leucocytosis, fever. Death Jan. 18, 1906.

External Lesions.—Multiple subcutaneous abscesses and sinuses involving the face, scalp and extremities; erosion of left parietal bone; deep sloughing ulcer of right thigh; numerous superficial ulcers and scars.

Internal Lesions.—Miliary blastomycosis of lungs and spleen; ulcerative blastomycotic bronchopneumonia; retroesophageal abscess with erosion of vertebræ; abscess of thyroid cartilage, fibrous pleuritis; atrophy of heart and liver; enlargement of the spleen and mesenteric lymph nodes. Microscopically nodules in lungs show necrotic centers surrounded by zone of giant cells and new tissue cells; giant cells all contain blastomycetes which also occur free; occasional bronchiole is found in center of area; blastomycetes in large blood vessel in lung near focus; blastomycetes in retroesophageal abscess; blastomycetes in cellular foci in spleen; no giant cells here. No amyloid.

Microbiology.—Cultures from the blood during life sterile; cultures from sputum and pus gave blastomycetes. Streptococci isolated after death from cerebrospinal fluid, liver, spleen, kidney and staphylococcus pyogenes aureus from liver, spleen, retropharyngeal and knee abscesses. Blastomycetes present in lesions, but after death isolated only from kidney. Virulent for guinea-pigs and rabbits causing local abscess and general miliary blastomycosis. Tubercle excluded thoroughly—no bacilli found in sputum, urine of pus, no tuberculosis in inoculated guinea-pig.

10. CHRISTENSEN AND HEKTOEN (THE JOURNAL A. M. A., 1906, xlvii, 247): Male, 28 years, born in Norway, resident in Iowa, farmer and milk-peddler.

Onset and Course.—In November, 1904, acute fever lasting one week; at end of second week numerous red spots and lumps formed on face, neck, head, back and extremities; some subsided, others (especially in scalp) "broke and healed," and others grew into ulcers and abscesses. Loss of weight. In June, 1905, lesions on legs and foot extended; abscesses formed, first submaxillary, then subclavian, and on arms. In fall marked improvement, but in December all healing ulcers broke out again simultaneously; in January, 1906, 60 lesions of skin and subcutaneous tissue, most of them being ulcers and scars. Slight cough with bronchial râles. No tubercle bacilli or blastomycetes in sputum. Urine normal. Local and general treatment, including injections of blastomycetic vaccine, was followed by improvement. After leaving hospital in April, 1906, new foci appeared about right elbow. (For subsequent history I am indebted to Dr. C. Hoegh, Decorah, Iowa.) Cough subsided. Following abandonment of vaccine cutaneous lesions appeared to increase. Early in August pain between shoulder

1. The organism isolated from this case and those from Cases 9, 10 and 11 have been subjected to detailed study by Hamburger, Jour. Infect. Dis., 1907, iv, 201.

blades, especially on motion, with muscular tenderness, and pain in neck and upper spine on pressure on head. At noon August 15 sudden paralysis with anesthesia below neck. No cerebral symptoms. Some pain in neck, dyspnea, slowly increasing. Death August 16. No necropsy.

External Lesions.—Healed lesions often marked by brown depression. In addition to abscesses nodules with reddish blue skin discharging pus through many minute openings; when a little older red, granular, easily bleeding and tender ulcers would form; older ulcers may have elevated margins with papillomatous, crusted surface in which minute abscesses occur. Microscopically, cellular infiltration, minute abscesses, giant cells, blastomycetes and epithelial proliferation. No tubercles. No caseation.

Microbiology.—Numerous blastomycetes—no tubercle bacilli—in pus which yielded pure cultures of organisms of Ricketts' hyphomycetoid type.

11. CHRISTENSEN AND HEKTOEN (THE JOURNAL A. M. A., 1906, xlvii, 247): Man, 58 years, born in Norway, farmer in Wisconsin.

Onset and Course.—Became acutely ill Jan. 23, 1905; three weeks later large abscess in left lumbo-sacral region, incision; somewhat later another similar attack with chills and weakness and development of swelling in left forearm; then on outside of right thigh, right forearm, and over left trochanter, red spots 2 cm. in diameter, increasing rapidly, forming crusts with offensive odor and assuming appearance of elevated ulcers which would heal partially and reopen. In October painful abscess of right arm, incision, sinus. Cough. Fluctuating swellings of left arm. No enlarged lymph nodes. Bronchial râles, some temperature. In April tubercle bacilli, but no blastomycetes in the sputum. Died in March, 1907.

External Lesions.—Abscesses large as hen's eggs on arms. Ulcer 10x5 cm. on right thigh with undulating, elevated margins, the surface granular or papillomatous, covered with light crust. Warty area over left hip. Ulcer 13x7 cm. on right forearm, healing in center. Microscopically, no tubercles, no caseation, but typical blastomycetic infiltration with giant cells, epithelial hyperplasia and organisms.

Microbiology.—Blastomycetes, but no tubercle bacilli, in pus which yielded pure growths of organisms of hyphomycetoid type. Tubercle bacilli in sputum.

12. COLEY AND TRACY (*Jour. Med. Research*, 1907,): Male, 24, resident of New York City.

Onset and Course.—Several months after injury to left foot by clam shell, pain in back, and pain and swelling of back of left foot; in a few days fluctuation and a small sinus appeared, also two small swellings on outer aspect of right foot, which became encrusted, with pus underneath; about a week later like lesions appeared on the face and also numerous subcutaneous swellings in various parts, particularly thigh and arms, varying from hazelnut to small hen's egg in size, and usually breaking open spontaneously. Cough appeared and rapid emaciation. Patient still living at time of report.

External Lesions.—Lesions consisted of granulation tissue, infiltrated with leucocytes, and containing giant cells, spherical and budding blastomycetes.

Microbiology.—Blastomycetes in pus; pure cultures obtained; blood cultures sterile.

13. HERRICK, J. B. (THE JOURNAL A. M. A., 1907, xlix, 328): White, 24, resident of Chicago, wife.

Onset and Course.—April 24, 1904, illness began with "spots like bruises and pains like rheumatism;" first lesions over left gluteal region; during next two years 79 distinct lesions, from 1 to 5 cm. in width, starting as reddish or purplish spots in skin and subcutaneous tissue, and as a rule breaking open spontaneously; largest abscess over left gluteal region opened and drained; in some cases lesions destroyed bone; granulated ulcers with undermined edges would develop, leaving on healing a comparatively slight scar; lesions often highly painful. Usually some fever with exacerbations; no definite pulmonary lesions; anemia, leucocytosis, nervousness and insomnia; iodid of potassium only temporary benefit; while in California February to August, 1906, spontaneous *perfect recovery.*

COMMENTS ON SOME OF THE FEATURES PRESENTED BY THESE CASES.

Age, Nationality, Occupation of Patients.—The ages of the patients in these cases vary from 17 to 58 years. All save two (Cases 1 and 13) were men. The occupations given for the men all involve manual labor. While most of the Chicago cases occurred in so-called foreigners, yet the infection in every case unquestionably developed here either in Chicago itself or in its vicinity. So far there is no definite intimation in any of the published records of systemic blastomycosis that heredity or contagion have been found to play any rôle in the natural spread of the disease.

Eastman and Keene[2] describe an incised wound that became infected with blastomycetes and later with bacillus pyocyaneus; in this case the mother of the patient had been "troubled with boils," and when examined she was found to have in the axilla a hard mass as large as a hen's egg, and at the point of the elbow, where a swelling had existed, there was still some discharge in which were blastomycetes in large numbers. At the same time a son, 19 years old, had a swelling on the hip, which broke spontaneously, but was still discharging. The author regards these as cases of blastomycotic family infection. Albers[3] mentions the fact that the children of a man, who suffered from pain in the chest, cough and loss of strength, and whose sputum contained blastomycetes, had small pustules over the entire body, and the question is raised whether or not the disease of the children was blastomycosis.

Recovery from systemic blastomycosis has occurred in two cases, namely, in Case 4 in which Gilchrist thinks the disease was just beginning to be systemic, and in the interesting case (Case 13) reported by Herrick. In the fatal cases the duration has varied but in all months intervened between the evident systemic outbreak and death.

Onset and General Symptoms.—In some of the cases the onset seems to have been sudden (Cases 10, 11 and 13), and not unlike that of an acute febrile illness, manifestations of systemic invasion appearing shortly in the form of cutaneous, subcutaneous and deeper lesions. In these cases there is no definite indication of any early involvement of the lungs. In other cases (Cases 5, 6, 7, 8) pulmonary symptoms, such as cough, expectoration, discomfort in chest, were among the first to appear, to be followed in most cases before long by localization in various places, weakness, emaciation and fever. In Case 9 the early constitutional symptoms were slight, subcutaneous or subepidermal nodules appearing in various parts without any apparent cause. In Case 3 the systemic outbreak was marked by recurrent attacks of chills and fever, signs of pulmonary involvement and subepidermal lesions.

The lesions of systemic blastomycosis do not appear to be always painful. Some of the ulcers that form are spoken of as tender to the touch; others as highly painful.

The general course and symptoms of the established disease are in the main those of a more or less chronic, essentially pyogenic, infection, with a special tendency to superficial localizations. In the cases with subcutaneous and cutaneous lesions—nodules, abscesses, ulcers—and these cases are the more numerous, demonstration of blastomycetes in the pus or tissues is not difficult. In cases with pulmonary lesions blastomycetes may appear in the sputum, which may be blood stained. Hence there is no special difficulty in the way of a correct diagnosis in most of the cases.

Infection Atrium.—In two of the thirteen cases, namely, Case 3 (Montgomery-Walker) and Case 4 (Gilchrist), is there a history of a typical, chronic blastomycetic dermatitis existing for some time before the outbreak of the systemic infection. In Case 1 (Busse-Buschke) the facts as to this point do not seem to be quite clear. In the other cases, except Case 6, Case 8 and possibly Case 2, there occurred more or less explosive outbreaks, generally associated with well-marked febrile reactions, of subepidermal and subcutaneous lesions, some of which in time developed into typical superficial blastomycetic ulcers with raised borders, warty surface, miliary abscesses and efforts at central healing. In many of these cases the history points quite directly to the respiratory tract as the place of entrance of the infection and the bronchopneumonic character of some at least of the pulmonary lesions (Cases 7, 8, 9) may be taken to indicate their air-borne nature. In one of the cases (9) in which tuberculosis was excluded with especial care, there was some cavity formation in the

2. Annals of Surgery, 1907, 40, 613.

3. Trans. Chicago Path. Soc., 1907, vii, 21.

lungs. The occurrence of blastomycetes in the sputum in some of the cases is of interest first from the point of view of diagnosis and secondly as a means whereby the disease may be communicated to new hosts either by way of droplet or dust infection. The cutaneous lesions also would seem to afford ready avenues for escape perhaps to new hosts.

Distribution of the Lesions, etc.—In all the cases the distribution of the lesions as well as the evolution of the visible, external foci show that the dissemination of the organisms takes place in the blood. Indeed, the complete absence in the reports, except in Cases 4 and 7, of any mention of involvement of the lymph nodes, is noteworthy. The actual occurrence of the organisms in the blood has been demonstrated: Buschke obtained pure cultures from the blood in Case 1 and Otis and Evans (Case 5), as well as Irons and Graham (Case 9) found blastomycetes in the blood vessels in microscopic sections. In two cases, namely 6 and 8, were there no gross external lesions, and that in spite of localizations in the lungs, liver, kidneys, adrenals, spleen and myocardium in one, and the subcutaneous tissue, the vertebræ and lungs in the other. In nearly all the other cases the skin and subcutaneous tissue appear to have attracted the most extensive localization, which in some cases, but especially in Case 5, probably the most virulent instance in the series, continued quite steadily, or in more or less definite crops, up to the time of death.

There are several other interesting points worthy of emphasis. Thus the development of blastomycotic spondylitis in Bassoe's case (8) and also in Cases 7 and 10 (in the latter case the clinical course indicates such involvement), is noteworthy; other cases illustrate osseous involvement elsewhere. Here may be mentioned a case recently reported briefly by Brewer[4] of blastomycotic abscesses of the back with involvement of the vertebræ, but without any evidence as to the primary point of infection; the final outcome is not yet reported.

The facts that there has been involvement of the mucous membranes, the larynx and trachea presenting ulcers, in Case 5, and the colon peculiar nodules in Case 7, and that the central nervous system as well as the lymph nodes have been invaded (Case 7), are of great interest, but it is clear that many new cases must be studied carefully, both clinically and anatomically, before the full range of pathogenic possibilities can be defined accurately. Further observations are needed also in regard to the blood in systemic blastomycosis; especially indicated are more extended determinations of the number of leucocytes with differential counts.

In Case 11 there seems no reason to doubt the coexistence of systemic blastomycosis with pulmonary tuberculosis. In such cases it would be especially interesting to study the anatomic changes, gross as well as microscopic, in order to observe the mutual influence the two infections may have on the lesions peculiar to each.

The occurrence of amyloid in Cases 6 and 8 shows that blastomycosis must be included with those infections that may induce this change.

General Character of the Lesions.—Study of human material as well as material from inoculated animals shows that the micro-organisms in question may induce the formation of an inflammatory granulation tissue with numerous giant cells of the Langhans type associciated with more or less extensive suppuration. The relative predominance of proliferative or suppurative processes appears to vary under various conditions. In loose connective tissues, such as the subcutaneous, there seems to be a distinct tendency to abscess. And as shown in Cases 10 and 11 the pus of such abscess may contain pure cultures of blastomycetes. Microscopically, the more or less nodular lesions in which the proliferative changes are well marked, present certain general resemblances to those of tuberculosis. Real caseation and wholly typical tubercles, however, do not seem to occur. The smaller nodular lesions in the internal organs consist essentially of cellular accumulations around blastomycetes which frequently occur within giant cells commonly present in large numbers. When within giant cells and other cells the organisms may lose their adventitious capsules and evidences of disintegration of the organisms are not uncommon. In the older lesions there may be some necrosis in the center. The walls of abscesses contain phagocytic giant cells. In certain cases, e. g., Case 5, nodules or areas may form which consist largely of blastomycetes, which are rapidly proliferating by budding. The typical blastomycetic cutaneous ulcer has been described and figured so often that it is not necessary to go into details. Commonly it seems to begin as a papule or nodule, which softens, yielding a glairy, somewhat tenacious pus; a granulating surface forms which assumes a more or less verrucose appearance, and in the reddened, raised margin may be many minute abscesses. Larger subcutaneous nodules may cause pin-hole perforations of the overlying skin and even necrosis of larger areas. As the superficial lesion advances there is often cicatricial healing in the older parts. Cross-sections show in the active districts, first a papillary zone, and second a deeper, vascular, grayish-red zone, in which may be minute abscesses resting on subcutaneous fat. Microscopically, there are marked epithelial hyperplasia, sometimes spoken of as carcinomatoid, and a granulomatous infiltration of the corium with minute, often intraepithelial, abscesses and giant cells, as well as spherical, double-contoured, frequently budding organisms, generally from 10 to 30 microns in diameter. The number of blastomycetes present in such ulcers may vary, and in some cases prolonged search may be required. In sections from the ulcers in Cases 10 and 11 they were quite numerous. In the pus of larger abscesses the organisms as a rule are numerous and readily demonstrable in unstained smears of the pus diluted with 1 per cent. KOH solution or with the usual salt solution.

General Characteristics of the Micro-Organisms Concerned.—I do not wish to dwell any further on the morphologic details and staining peculiarities of the organisms in tissues. They are brought out quite distinctly by the usual stains, and according to Wolbach,[5] Mallory's anilin-blue stain for connective tissue fibrils[6] colors the capsule bright blue and the protoplasm red. Special stress must be laid on the fact that endogenous sporulation has not been demonstrated definitely in the organisms as they occur in the lesions of blastomycetic dermatitis and systemic blastomycosis, except that Le Count and Myers (Case 7) describe and figure endosporulation in the cerebellar lesion.

In his monograph on blastomycetic dermatitis, Ricketts[7] points out that the organisms cultivated by various observers from the lesions of this disease up to 1902 fall into three groups: 1, Blastomycetoid; 2, oidium-like; 3, hyphomycetoid. All the organisms, however, exist in

4. Proceedings New York Path. Soc., 1907, vii, 54.

5. Jour. Med. Research, 1906, xv, 167.

6. Ibid., 1905, xiii, 113.

7. Oidiomycosis (Blastomycosis) of the Skin and Its Fungi, Jour. Med. Research, 1902, vi, No. 3.

tissues in the blastomycetoid form and multiply there by budding principally. And such is the fact in all the cases I have tabulated as systemic blastomycosis, except in the forementioned Case 7 (Le Count and Myers), in which sporulating forms were found in the cerebellar mass only. In view of this fact the application to such cases of the term blastomycosis, which has secured a firm footing in the literature, seems not inappropriate, at least for the present. On culture media the blastomycetoid form exists chiefly as spherical or budding cells, but under suitable conditions it may produce abundant mycelium. The Busse-Buschke and the Curtis organisms appear to belong in this group. In culture the oidium-like group forms submerged mycelium which breaks up into chains of "spores," while proliferation by budding is not a prominent feature. The hyphomycetoid group produces fruit-bearing — terminal and lateral spheres — aerial hyphæ, submerged hyphæ, similar to those of the first two groups, and is also capable of multiplying by gemmation. Hence from the first to the third group there is a gradual transit. Ricketts places all the organisms in the genus oidium. The organisms should be studied exhaustively by botanical methods in order to obtain better understanding of the life processes.[8]

THE "PROTOZOIC SKIN DISEASE" OF WERNICKE, RIXFORD AND GILCHRIST—OPHÜLS' COCCIDIOIDAL GRANULOMA.

In 1891 Wernicke described an instance of a nodular and ulcerating skin disease with glandular and visceral involvement, in all the lesions of which were numerous spherical, often sporulating, double-contoured bodies, which he regarded as sporozoa. Posadas reproduced the disease in monkeys. In 1896 Rixford and Gilchrist recorded two similar cases from California which they also regarded as protozoic in nature. In 1900 two further cases were reported, also from California, one by D. W. Montgomery and one by Ophüls and Moffit. Since then several other cases have been observed (see summary). From the Ophüls-Moffit case pure cultures were secured for the first time, and Ophüls, tracing the growth in hanging drops, showed definitely that protozoan-like bodies, in every way similar to those seen in the lesions of the various human cases, give rise to a septate mycelium, which in its further growth forms spore-bearing, aerial and submerged hyphæ. Further, that on inoculation of animals (dogs, rabbits, especially guinea-pigs) with this mould fungus there develop lesions that are similar to the human structure and in that the organisms they contain are spherical, double-contoured, multiplying by sporulation and not by budding. The size of the adult spherical organisms varies from 5 up to 30 microns or so. The sporulating forms which commonly show prickles or bristles on the outside membrane, may contain 100 or more minute spores; burst capsules from which the spores have escaped, or are doing so, may be seen. The protozoan-like bodies consequently belong to the life cycle of a mould which in the animal body multiplies by endogenous sporulation in media by mycelium and chlamydospores. Ophüls seconds the proposition of Ricketts to enlarge the genus oidium so as to include not only the organisms of blastomycosis proper, but also the sporulating variety just outlined, which Ophüls proposes to call *Oidium coccidioides*, and the disease it causes he would name coccidioidal granuloma. The principal facts concerning this disease are given in the summary.

8. Hamburger, Jour. Infect. Dis., 1907, iv, 201.

TABULATED SUMMARY OF THE RECORDED CASES OF COCCIDIOIDAL GRANULOMA ("PROTOZOIC SKIN DISEASE").

1. WERNICKE (*Jour. de Microg.*, 1891, xv, 14; *Centralbl. f. Bakt.*, 1892, xii, 861); POSADAS (*Rev. de Cuir.*, 1900, xxi, 277): Man, born and living in Buenos Ayres.

Onset and Course of Disease.—Several years before death nodules began to form on face, trunk and lower extremities; nodules at first small, movable with skin, later often confluent and even ulcerating. Diagnosis: Mycosis fungoides. Left inguinal glands much enlarged. At time of death nearly whole body was involved.

External Lesions.—The cutaneous lesions showed a granulomatous growth in corium, often with central softening and generally with numerous giant cells, all containing coccidioidal bodies 3 to 30 microns in size.

Internal Lesions.—Numerous nodules in lymph nodes and viscera consisting of central giant cell with parasites surrounded by epithelial and embryonal cells. Numerous organisms in inguinal lymph nodes,, as many as 60 being counted in one field.

Microbiology.—Cultures not obtained. Organisms observed regarded as sporulating sporozoa. No budding forms noted. Adult or vegetative form a sphere of granular protoplasm 25 microns in diameter, without nuclei, surrounded by birefractive sac, segmenting or invasive form beginning as small spherule in protoplasm. Organisms virulent for warm-blooded animals, especially monkey, causing same lesions as above, with same parasitic forms, which were constantly present in all inoculated animals.

2. RIXFORD and GILCHRIST (*Johns Hopkins Hosp. Reports*, 1896, i, 209: Man, 40, born in Azores, resident in California, laborer.

Onset and Course.—Disease first appeared on back of neck, extending slowly, remaining localized for 5 or 6 years, when like lesions appeared on eyebrows, nose, cheek, ear, back of right hand. Eventually, after eight years or so, regional lymph glands became involved, intermittent temperature, cough râles in lungs. Both eyes destroyed. Death in January, 1895.

External Lesions.—Destruction of eyes; partial of nose, left ear; extensive scars on face, neck, hand and active lesions about mouth and on scalp; sinus leading to dead bone on tibia and finger. Ulcer on neck 15 x 12 cm. (5 x 4 inches). Hyperplasia of epidermis, inflammatory infiltration with new growth of tissue and minute abscesses, giant cells and numerous "protozoa."

Internal Lesions.—Grayish nodules, 1 mm. in diameter with caseous areas, small cavities and scars in lungs; nodules on pleura, parietal peritoneum (diaphragm and pelvis), and in liver, spleen and adrenals. Purulent foci in bronchial and retroperitoneal lymph glands, in testicles, prostate and seminal vesicles. Mucous membranes normal. Nodules almost identical in microscopic structure with miliary tubercles; caseation. No tubercle bacilli found.

Microbiology.—"Protozoa" (*Coccidioides immitis*) in pus from testes, prostate, seminal vesicles, tibial sinus, sinus in hand and cutaneous lesions (during life), in lung cavities and nodules in adrenals, and infected lymph glands. "Protozoa" spherical, enveloped in double-contoured capsule, 15 to 27 microns in diameter, granular protoplasm; reproduce by sporulation, "sporozoites" escape through rupture in capsule, gradually enlarge and acquire capsule. Cultures failed. Some positive results from inoculations into animals. Infection regarded as coming from without because organisms were found embedded in stratum corneum near hair follicles.

3. RIXFORD and THORNE (*Occidental Medical Times*, 1894, viii, 704); RIXFORD and GILCHRIST (*Johns Hopkins Hospital Reports*, 1896, i, 209): Male, 33 years, Azores, laborer in California.

Onset and Course.—In June, 1894, hematemesis. In July two small pimples on forehead (left side), which became capped with vesicle and underwent purulent softening; gradual increase to patches 3 cm. in diameter. Shortly after, other spots, rather tender, appeared on face, scalp, trunk and upper extremities. In September glands of neck enlarged; rapid enlargement of epitrochlear gland after appearance of lesion on forearm; there was sore throat and cough; one inguinal node was enlarged; weakness; night sweats; fever. Death Sept. 21, 1894.

External Lesions.—Edges of ulcers red, elevated, ragged, indurated; surface papillary, bright red, covered by pus; 1 to 4 cm. in diameter; sections show numerous minute abscesses, epithelial hyperplasia, inflammatory infiltration, especially with leucocytes, and "enormous numbers of protozoa." No autopsy. Myriads of protozoa in cheesy material from bubo in left groin.

Microbiology.—"Protozoa" similar to those in Case 2, but generally larger and sporulation forms more numerous, sporozoites about 2 microns in diameter. Name of *Coccidioides pyogenes* proposed because of abundant pus production.

4. OPHÜLS and MOFFIT (*Phila. Med. Jour.*, 1900, v, 1471); OPHÜLS (*Jour. of Exp. Med.*, 1905, vi, 443): Man, 19 years, born in Azores, resident in California.

Onset and Course.—Chill followed by pleuritis, irregular fever, dulness over left apex and elsewhere; multiple acute arthritis; osteomyelitis of frontal bone; expectoration mucopurulent and blood streaked; night sweats; no tubercle bacilli in sputum. Leucocytosis 17,000. Death in three months.

External Lesions.—None.

Internal Lesions.—Irregular nodular consolidations, up to 1 cm. in diameter, with necrotic centers and abscesses in lungs in which were also distinct bronchopneumonic areas. Abscess in left lung extending through diaphragm into retroperitoneal glands. Left pleural empyema. Miliary foci in spleen, liver and both kidneys. Purulent osteomyelitis of frontal bone and both tibias with abscesses and perforation of skin; suppurative arthritis of both knee joints, right shoulder, both elbows and wrists. Lesions tuberculous in character with transitions to abscesses as well as formations of masses of fibrous tissue with occasional giant cells containing parasites.

Microbiology.—Parasites in all organs affected; adult forms in the less acute lesions and sporulating forms, especially in abscesses. First case to yield cultures of parasite (see text). No tubercle bacilli demonstrable.

5. MONTGOMERY, (D. W.) (*Brit. Jour. Dermatology*, 1900, xii, 343): Man, 21, born in Germany, telegrapher in California.

Onset and Course.—In July, 1898, first symptoms, namely, cough, night sweats, weakness, râles and dulness over lungs; no tubercle bacilli in sputum. Some 7 to 8 months later red, round, circumscribed nodules, up to one-half dollar size, with pus at top replaced eventually by an ulcer, appeared on scalp, face, neck

shoulder, forearm, wrist, upper arm, buttocks and thighs. Death June 7, 1899.

External Lesions.—Ulcers ragged, overhanging edges, granular floor, covered with scab; sections show giant cells and numerous parasites, many sporulating.

Internal Lesions.—Large fluctuating abscess over frontal eminence; abscess in mandibular fossa, supraclavicular fossa, and in subcutaneous tissue over chest, the latter connecting with one in clavicular fossa, and with pleura and lung; small abscess in lung, large in liver. Parasites in pus.

Microbiology.—Parasites spherical, with granular protoplasm, double-contoured capsule, and endogenous spores. Culture on glycerin agar gave a filamentous growth, discarded as contamination.

6. MONTGOMERY, (D. W.), RYFKOGEL AND MORROW (*Jour. Cut. Dis.*, 1903, xxi, 1): Man, 54 years old, born in Switzerland, resident in California.

Onset and Course.—Gradual enlargement of left hand and forearm since 1893 and of left leg and ankle since 1894; in 1897 eruption on chest, in 1900 on left forearm and hand and soon after on neck and ears. In August, 1901, thick skin and subcutaneous tissue over left hand and forearm over both legs and left foot with separation of lower end of radius. Pigmentation of chest and abdomen. Discrete, closely placed papules and pustules over left forearm and hand. Right ear swollen and red. General health good. Some leucocytosis with eosinophilia. In December weakness, anorexia, fever; in January, 1902, superficial ulcers on chest. Death January, 1902.

External Lesions.—Diffuse infiltration of corium with groups of double-contoured, often sporulating organisms in old cicatricial tissue, each organism lying by itself.

Internal Lesions.—Left lung and upper right lobe infiltrated with bodies like miliary tubercles composed of granulomatous tissue with giant cells and parasites. Suprarenals yellowish-white, friable, microscopically same as lungs.

Microbiology.—In October, 1901, cultures obtained from a macerated nodule in skin, mycelial threads arising from capsule of organisms and branching like mould fungus. Intraperitoneal inoculations of guinea-pig gave nodules on peritoneum and elsewhere, inflammation of scrotum, and caseous foci in lymph nodes. Nothing said as to tubercle bacilli in lesions of patient.

7. OPHÜLS (*Jour. Exp. Med.*, 1905, vi, 443): Male, born in Japan, resident in California.

Onset and Course.—Chronic ulcer of right foot below ankle on inner surface; inguinal lymph nodes large; later large abscess in anterior abdominal wall extending into pelvis. Large lymph nodes in neck. Patient passed out of sight. Ulcer red, elevated, 3 to 4 cm. in diameter, covered with brown scab. Inguinal lymph nodes large, dry, diffusely caseous. *Oidium coccidioides* in sections of ulcer and inguinal nodes. "Cultures in hanging-drops with usual results."

8. GARDNER AND HALTON (*California State Jour. of Med.*, 1904, ii, 386): Male, 32, born in Minnesota, of Swedish parents, living in California.

Onset and Course.—Jump from an engine sprained right foot which swelled up and became painful; abscess formed; able to return to work, but use caused swelling and pain. When seen four years later internal organs normal; no enlarged glands; right foot swollen, painful, no fluctuation; eventually small abscess opened and dead bone and granulation tissue removed; lymph nodes in right groin enlarged; no other external lesions; foot amputated and nodes removed; recovery.

Lesions.—All bones in foot except phalanges the seat of a rarifying osteitis and tibia and fibula carious. Sections showed nodules with giant cells and sporulating parasites; no tubercle bacilli present.

Microbiology.—*Oidium coccidioides* in lesions of foot and recovered in culture; no tubercle bacilli or oidia in lymph nodes; injection of cultures in abdomen of guinea-pigs caused caseous inflammation of tunica vaginalis and scrotal swelling.

9. OPHÜLS (THE JOURNAL A. M. A., 1905, xlv, 1291): Male, 62 years, born in Germany, baker in San Francisco.

Onset and Course.—Toward end of 1903 "cold abscess" developed in left side of chest and two ribs were resected; wound remained open. Large, soft, fluctuating swellings in neck. "Apparently cured." Granulation tissue from sinus in chest showed minute abscesses with giant cells containing parasites, many of which were sporulating. No skin lesions proper. Cultures obtained. (Nothing stated as to tubercle bacilli.)

10. OPHÜLS (Ibid, see Case 9): Man, Chinese, San Francisco.

Resection of humerus on account of caries involving elbow joint. Patient died with symptoms of chronic pulmonary disease with purulent expectoration; no tubercle bacilli in sputum. Paraplegia. No autopsy. No external lesions. Extensive disintegration of bone with tubercle-like nodules with giant cells, areas of caseation and many organisms. Sporulating form in abscess. No cultures. (Nothing said as to search for tubercle bacilli.)

11. OPHÜLS (Ibid., see Case 9): Old man, German, living in San Francisco.

Unconscious when seen. Death. No external lesions. Scar at apex of lungs; pleural and pericardial adhesions with miliary abscesses and nodules; basilar meningitis with nodules; nodules in kidneys and in spleen. Sporulating parasites in lesions; no tubercle bacilli.

12. OPHÜLS (Ibid., see Case 9): Man, 19, canner in San Francisco.

Fever and chills for four weeks developing into symptoms of severe chronic meningitis. Death in three months. No external lesions. Old caseo-calcareous spot in peribronchial lymph node; irregular caseous process in adrenals; one nodule in kidney; basilar meningitis with nodules and extensive chronic spinal leptomeningitis with nodules and miliary abscesses. Cord soft under thick pia. Terminal bronchopneumonia and urinary infection. Case regarded as one of tuberculosis until sporulating parasites were found in meninges without presence of tubercle bacilli; the latter present in adrenals.

13. WOLBACH (*Jour. Med. Research*, 1904, 13, 53).

The clinical side of this case is not discussed. The patient is still living, has traveled extensively and has been in California and New Mexico. The disease is connected with a history of chronic furunculosis for ten or more years, some of the boils having been very slow in development. Over both sides of the forehead and behind the left ear an ulcerative process had extended through the bone, stopping at the dura. All the lesions began subcutaneously and were removed by surgical means without recurrences up to the time that the report is made. The organism was isolated in pure culture and caused in guinea-pigs tuberculoid lesions containing pus in which occurred capsulated bodies 5 to 35 microns in diameter, many with spores, but without budding forms.

14. BURROWS (unpublished case, cited by King, THE JOURNAL A. M. A., 1907, xlviii, 743).

Disease lasted 14 months; there were warty nodules at end of nose; multiple abscesses of lung, erosion of sternum, pleurisy with effusion, abscesses of sacrum, wrist, kidneys.

15. KING (Ibid., see Case 14): Man, Japanese, 25, laborer in California.

Onset and Course.—Nov. 5, 1905, fever, vomiting followed by cough and pain in joints, especially right ankle and left sterno-clavicular, later right wrist and left clavículo-scapular. Four weeks later swelling over right internal malleolus followed by similar swellings, all fluctuating successively; dorsum of right hand, right supraclavicular fossa, left supraspinous fossa; left sterno-clavicular articulation, all of which developed rapidly. Cutaneous lesions appeared. Emaciation. Jan. 23, 1906. Cutaneous lesions. Papillary lesions with tendency to progression appeared in various parts (chin, forearm, thigh, etc.).

Internal Lesions.—Abscesses with caries of the adjacent bone in the right supraclavicular region and apex of right lung, left sterno-clavicular articulation, left supraspinous fossa, dorsum of right hand, right ankle, mediastinal glands, peribronchial glands, general fibrinous peritonitis with enlarged mesenteric glands; no lesion of internal surface of digestive tract described.

Microbiology.—Pure culture from pus in supraclavicular fossa and in peritoneal exudate.

16. KING (Ibid., see Case 14): Man, 28, laborer in California.

Disease began with ulcer, punched-out, red, with jagged edges, on left wrist which healed and formed again several times; ovoid tumor under left clavicle, and seventh, eighth and ninth left ribs, pus from which showed double-contoured, sporulating bodies. Three years later fatal illness diagnosed as acute miliary tuberculosis.

"Autopsy showed the lungs to be studded with what appeared to be miliary tubercles, and no further examination was made."

17. KING (Ibid., see Case 14): Male, 28, Japanese, railroad laborer in California.

Pain, swelling and redness in neighborhood of ankle joint and in cervical lymph nodes with suppuration, healing under surgical measures, further lesions again appearing near the old and on the face. Successful cultures from first abscess.

King also reports a case of multiple cutaneous pustules and irregular pulmonary consolidations, which he regards as probably coccidioidal granuloma, although the diagnosis is not confirmed by culture or microscopic demonstration.

FEATURES PECULIAR TO COCCIDIOIDAL GRANULOMA.

It is remarkable that all the cases so far reported have occurred in men. The occupation and nationality seem not to have any influence on the causation of the disease, all the instances of which save one (Case 1, possibly 2) appear to have originated in California. The clinical course is variable and has lasted from three months to nine years. When the disease is well established there may be intermittent fever, night sweats, increasing weakness. As in systemic blastomycosis, so also in coccidioidal granuloma we may distinguish between cases that appear to be primarily cutaneous (Cases 1, 2, 3, 16) and primarily respiratory (Cases 4, 5, 15); this leaves a larger number in which the atrium remains doubtful. Taking these cases of coccidioidal granuloma as a group we notice that while the lesions are distributed more irregularly than in systemic blastomycosis they are also distributed more widely, e. g., to the cerebrospinal membranes, to serous membranes, the joints, and, as especially noteworthy, commonly to the lymph nodes, regional as well as otherwise. In coccidioidal granuloma dissemination consequently occurs by way of the lymphatics as well as by way of the blood vessels, and it has been suggested that it is especially the minute forms—spores—that are carried by the lymphatics. As regards the cutaneous lesions in coccidioidal granuloma, suffice it to say that they vary somewhat; usually they begin as a papule or nodule and follow very much the same course as the cutaneous lesions of blastomycosis; at times, however, they may be more ulcerative. It is noteworthy that all the observers emphasize that the nodular lesions of coccidioidal granuloma may be indistinguishable from those of tuberculosis except for the fact that they contain sporulating parasites in place of the tubercle bacillus, which is absent. In fact, it has been observed that this disease presents the best mimicry of tuberculosis ever seen and the lesions

can not be distinguished from tubercles by the microscopic anatomy. Even typical caseation appears to occur. It has been noted that the adult forms of the *Oidium coccidioides* occur mostly in the less acute lesions, while the abscesses contain numerous sporulating and occasional budding forms. The spores appear to attract leucocytes which have been seen to enter the capsules (Ophüls).

On injection into the abdominal cavity of guineapigs the organisms from Cases 6 and 8 gave rise to caseous inflammation of the tunica vaginalis with scrotal swelling—a point worthy of consideration in working with material suspected of containing *B. mallei*.

SUMMARY.

Systemic blastomycosis and coccidioidal granuloma are caused by closely related varieties of organisms that Ricketts and Ophüls would place with the oidia. Culturally, these organisms may resemble one another very closely. In the tissues of the infected animal or human being in which both exist as spherical bodies, they present this striking difference: that the organisms of blastomycosis multiply almost wholly by budding, while those of coccidioidal granuloma multiply essentially by endogenous sporulation. Neither forms mycelium in the animal body.

Systemic blastomycosis and coccidioidal granuloma resemble each other in many respects, both clinically and anatomically, but at the same time there are certain well-marked differences of which the following appear to be constant and distinctive: 1. The nodular lesions of coccidioidal granuloma bear a closer resemblance to the typical, specific tubercle than the nodules of blastomycosis. 2. In coccidioidal granuloma there is marked tendency to involvement of the lymph nodes, in blastomycosis slight. 3. As already stated in coccidioidal granuloma the organisms multiply by endogenous sporulation in blastomycosis by budding.

Nothing is yet known concerning the conditions that lead to natural infection with either of these diseases, but human beings once infected appear susceptible and the apparent infrequency of the diseases may be explainable by assuming that as yet the occasion necessary for infection is infrequent.

MUNICIPAL REGULATION OF THE MILK SUPPLY.*

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"We can't do too much to help them. The future of this country depends on its poor children. If they are to do right, they must be saved from ill health, and ignorance and vice; and the first step is to give them good food and air so that they shall have strong little bodies."—PAUL LEICESTER FORD, in "The Honorable Peter Stirling."

If we take this statement at its worth, it means that the food of a child determines the future of the citizen and the physical strength of the potential fathers and mothers of the state. In guarding the milk supply we are not then confronted solely with the question of infantile sickness and death, with possible outbreaks of infectious disease through milk, but with a far larger problem, one of the greatest of social problems, that of the future of the race.

The first duty of man is to be a good animal. To be a good animal he must be well housed, well clothed and well nourished. In his duty to the state can he do less than to house, clothe and feed his children? Ought not the state do all in its power to aid the man in selecting shelter, clothing and food for his family, so that the wants of the many may not be exploited for the benefit of the few?

We are here to consider the ways and means by which the municipality, a political division of the state, may best protect the food of the infant. Milk is, of necessity, the sole food of the infant during the first and most important months of life, and it is to secure the municipal regulation of this food supply, by surrounding it with every possible safeguard, that we must address ourselves, both for the baby and for the state, both now and for the future.

This milk that the baby must have is the article of food that requires more care in its production and handling, and consequently more care in its supervision, than any other food. All through the many steps of production and handling this food supply of the baby must be protected. Not until the baby's milk has entered the baby's stomach must our vigilance be relaxed. For milk is unlike other foods; if once it is dirty it can not be cleansed. Most other foods may be heated without impairing their digestibility. Milk can not be so treated. Preservatives may be added to other foods without great harm to the adult. Who would permit the addition of preservatives to milk for the baby? Milk may be contaminated by the organisms of infectious diseases, diphtheria, scarlet fever, typhoid fever, tuberculosis, by any of the colon group and other allied organisms. Shall we by heat or by mechanical means chance the removal of part of the contaminating material, or shall we for the sake of the baby prevent these poisons from gaining access to milk? Other foods than milk may be kept at room temperature for long periods of time without change, cooked without change, subjected to mechanical operations without change, but it is not so with milk that is to be used as food for the baby.

We establish children's hospitals, we employ physicians to cure children affected by the diarrheal diseases of dirty milk, and at great expense we build and equip sanatoria for the treatment of men, women and children affected by the great white plague, and we permit the sale of dirty warm milk from filthy tubercular cattle, while the boards of managers of the children's hospitals and tubercular sanatoria cry out for more beds. Has not the time arrived when we may spend some more of our funds in preventing diseases, in educating the dairyman to produce clean milk, the public to demand and to pay for clean milk, and to insist that the tubercular cow be weeded out and its place taken by the clean, well-kept, disease-free cow?

If milk is so important as a food for the baby, are we not justified in protecting it from contamination? Is not the state warranted in adopting the most stringent rules and enforcing them to the extent of the law? In its extremity is there anything the state ought not to do, even to owning and thus controlling the milk supply, should such a measure be necessary to protect the food of the babies? Unless we do protect our children's food, we may some time find that, instead of strong men, we have a race of Houligans.

I think it is unnecessary to say more about the need of protecting the municipal milk supply, but before

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taking up the question of its protection let us try to get the milkman's view.

Of the several millions of milch cows kept in this country, 50 per cent. are said to be kept at a loss, 25 per cent. return no profit, and only 25 per cent. are profitable to their owners. The business of milk production and distribution is not generally, save by the large concerns, conducted in a systematic manner. However practical the men engaged in the work may be, they are not scientifically trained in the different steps of tillage, planting, storing, feeding, nor in properly housing and caring for cattle, nor in handling and transporting milk. These men are all engaged in handling the most perishable of foods; the only one that does not rise and fall in price with the demand for it and with the cost of its production. Already most of the producers and retailers have done more than they have been paid for by the public in improving the conditions of their premises, their cattle and their utensils.

Then, men in the milk business work every day in the year, in the heat and in the cold, on Sundays and holidays. The demands of the public compel work and delivery at early and unusual hours, so that fresh (?) milk may be delivered for breakfast. We should consider these things in our discussion.

How can the municipality regulate the milk supply? It can pass and *enforce* milk ordinances. These municipal ordinances should provide that: Milk must be drawn from healthy, tuberculin-tested cows, well fed, watered and housed, having at least 600 feet of space and ample ventilation in well-lighted, airy barns. They must be cared for by daily grooming. They must have daily exercise in protected enclosures. The long hairs on the bellies, tails and udders must be kept clipped short. Before milking the udders must be cleansed with clean cloths by men whose hands are clean and who are unaffected by communicable disease. Feeding must take place after milking. In handling the milk it must be put into well-constructed, well-tinned, clean cans that have been sterilized by the retailer by exposing them to steam for at least one hour and afterward kept closed. The milking utensils, pails, strainers, coolers, must, after each milking, be washed by the producer and boiled in the milk room; never in the dwelling house. They must be covered and protected from dust until ready to receive the milk. Milking must be done in visored pails or by machine, and the milk carried directly from the barn to a clean, cement-floored milkhouse and poured into cans over a cooler protected from exposure to dust. The cans must be covered and cooled until ready for shipment in refrigerator cars, and must there be maintained at 45 degrees F., and must not be over 50 degrees F. on delivery to the consumer. Bottles used for milk must be sterilized in the same manner as the cans, filled in no other place but the milkhouse or city dairy, and used for no other purpose than milk containers under penalty of imprisonment. On bottled milk the cap must be secured by a paster covering it on which the kind of milk, "certified" or "inspected," must be printed in Gothic type not less than an inch high.

The whole milk must have the state standard of fat and solids, must not be watered nor have any of the cream removed unless distinctly labeled "skim milk" in Gothic letters, for cans, three inches high, and for bottles, one inch high. Milk must not be submitted to any mechanical or heating process and must contain no more than 100,000 bacteria per c.c. for inspected milk. Provision must be made for its sale from clean wagons. When kept in shops it must be stored in clean refrigerators, and must be sold by people having clean persons and clean clothes. Provision must be made for infants' milk depots in charge of trained nurses at least during the summer months, and such depots must be established in connection with stores where the cleanliness of place and person shall approach those of a model milk shop.

Then the municipality must provide for the inspection and enforcement of its milk ordinances by the following rules:

1. There must be a sufficient number of inspectors really to inspect, and through such inspections to determine that the applicant for the holder of a license is qualified to produce and distribute milk. To such an one only should a milk license be issued.

That adequate inspection may be made, a sufficient number of inspectors must be employed to collect:

a. From each wagon at least one monthly sample for bacteriologic and chemical examination.

b. At least once in two months a sample from each store offering milk for sale.

Every city dairy and every store to be scored at least quarterly by the inspector on a score card after the plan of those used by the U. S. Department of Agriculture and the Dairy Department at Cornell University.

2. There must be daily inspection of the incoming milk at each railroad station for:

a. Condition of and housing of cans and bottles of milk in shipment.

b. Condition of empty cans reshipped.

c. Temperature of milk.

d. Inspection of railroad samples to guard the retailers against fraud on the part of the wholesalers.

The written reports on score cards must be returned to the chief milk inspector, who reports directly to the head of the department.

Thus the city provides for the bacteriologic and chemical examination of the milk supply, wagon and store inspection and daily inspections at the railroad stations.

From such reports could be obtained sufficient data to enable the chief milk inspector to determine rapidly those who are violating the milk ordinances, and to enable the head of the department to promptly lay information against those dealers in milk who are violating the milk ordinance. For the first offense a fine should be imposed; for the second offense, the law should make imprisonment the punishment without alternative, and the man convicted the second time should not be permitted to enter or engage in the milk business again.

So much for the city end of milk inspection. The country end of the work is of equal, if not greater, importance.

3. The territory from which the city draws its milk supply must be mapped, the dairies plotted, the roads examined, the railroad facilities noted, and routes laid so that every farm shipping milk to the city may in the beginning be subjected to a systematic inspection once in two months. No milk must be permitted to enter the city until the seal of inspection has been placed on it by the inspector.

For larger cities drawing milk from a district too extensive to be inspected from a single center within the city, one or more places are to be determined as substations of inspection, each substation so designated to be placed in charge of an assistant chief inspector, with a sufficient force to cover the ground within his territory by monthly inspections. Each substation must have a laboratory equipment for both chemical and bacteriologic examinations, and to it the inspectors for

the district must bring samples of milk for chemical and bacteriologic examinations. To the officer in charge of the laboratory they must furnish reports on score cards of all the dairies within their jurisdiction. These reports must be furnished in quadruplicate, one to be left with the dairyman, one to be mailed to the retailer, one for filing at the substation, and one to be filed at the central office.

When such a laboratory is established, the inspectors must be given to understand that they are not altogether a police force, though having certain police powers. While their duty is that of protecting the milk supply of the city, they can best serve the interests of the city by teaching cleanliness in the production and handling of milk, the necessity for and rigid enforcement of an annual tuberculin test, for reporting and demanding the isolating of cases of infectious disease in the family of the dairyman and among his cattle, and also to guard against the introduction into the herd of animals untested by the tuberculin test. To every milk producer they must furnish illustrated booklets, where in the simplest language all the essentials of milk production and handling must be clearly set forth.

Near every small city, and in connection with the substations of every large city, there should ultimately be provision for a small experimental farm cultivated on the most intensive plan. At such a farm all the operations of dairy farming should be carried out for the benefit of the dairyman. These should include the preparation of the soil, drainage, tillage, preparation and selection of seed, planting, cultivation, harvesting, storing of grasses and grains, silos and silage, housing and care of cattle, milking, care of utensils, storage and shipment of milk, etc., all carried out on a small scale after the latest and most approved methods. This work ought to be done on a small old place, a somewhat run-down place being good for the beginning experiment, so that the farmer might actually see or learn by the records how the drainage and fertility of land had been increased. On such an old place, partly rebuilt, the farmer might learn how he could readapt his own premises to the needs of modern dairying if the state would but point the way.

If the municipality desires to exhibit a fine plant, let it establish such a plant in one of the city parks. Dr. Joseph Roby, of the Rochester Health Bureau, has suggested in a former paper that such a dairy plant might be established in connection with the park system of a city. In such a plant not only all advanced dairy operations might be carried out, but a day nursery with trained nurses in attendance could be established for babies, who on visiting the parks might be able to secure clean milk at cost, and where the mothers or nurses might see all the operations of advanced dairying, and so learn to demand cleaner milk for house delivery. We believe, however, that the plant in the country on a small farm, with old buildings that may be adapted by a small expenditure of money to the work of milk production, is most important. An expensive plant with new buildings would not appeal to the great army of small producers, and at present the small producer is the man on whom the city must depend for its milk supply. The problem for us is to show the small producer, the large producer and the dairyman, as well, how to produce clean milk at a profit without an expensive plant.

If the state will only establish an experimental dairy, a fund might be furnished through private philanthropy to assist a few dairymen in starting the work of producing clean milk. Not only men, but women, especially trained nurses with a desire for country life, might find here an occupation for which their work and training in the hospitals would help to fit them. This plan is, of course, largely tentative, but it is so important to the infant, the parent and to the state that the old unscientific way of producing market milk must give place to the newer and more scientific way of doing the work. Men endow chairs in universities, build and equip libraries, endow expeditions for astronomical, geological and geographical researches into remote regions and do many other things for the benefit of their fellows that involve the expenditure of thousands, even millions, of dollars. All this expenditure of vast sums of money is for teaching or for research. A few thousand dollars spent in aiding the establishment of demonstration dairies in public parks and on the outskirts of cities would do more for people than libraries or north pole research. It would help the work of the agricultural experiment station, help the farmer and the dairyman, and, with the assistance of the work of municipal milk stations, help to furnish clean milk for the babies that are to become the citizens of the future.

THE METHODS OF DEALING WITH THE MILK SUPPLY OF NEW YORK CITY.*

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NEW YORK CITY.

Among the questions dealt with by sanitary authorities there is no other of greater importance than the one concerning the production and distribution of a supply of pure, clean milk. Many of the features of the vast question of food adulteration are being met by our national government in its regulation of interstate commerce. Of necessity, however, these laws can control the transportation only of the less perishable articles of food, and the responsibility of the milk supply of a community must be left almost entirely to the local authorities. From the time when each family kept its own cow or depended for its supply of milk on a local farmer, to the present situation, when the big cities depend on a supply drawn from thousands of dairies scattered over wide areas, is a far cry.

This change has come about so insiduously and cities have grown with such astonishing rapidity that it is only recently that the public has awakened to the importance of this vital problem.

It is not my intention to discuss the question of the comparative merits of raw or pasteurized milk, but to present to you a brief outline of the methods used in New York City by its Board of Health in safeguarding the milk consumed in the city.

The milk used in New York comes from between 30,000 and 40,000 dairies or farms in an area covering some portion of six states—New York, New Jersey, Pennsylvania, Massachusetts, Connecticut and Vermont. The milk is collected at the shipping points or creameries, about 600 in number, and thence transported directly to the city. The longest distance from which it is transported is about 400 miles, while the shortest haul from a creamery is about forty miles. All of the milk

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

is at least twenty-four hours old when it reaches the consumer and the greater part is from thirty-six to forty-eight hours old.

It is recognized that there are two factors which influence and control very materially the keeping qualities of milk. The first is absolute cleanliness from the moment the milk is drawn from a healthy cow until such time as it is delivered into the hands of the consumer, and the second is the temperature at which the milk is kept during this period. If these conditions can be controlled and maintained it is perfectly possible to assure a perfect milk supply.

It has been the endeavor of the department of health to maintain these conditions as regards the milk supply of New York City, first, by systematic and constant inspection, and second, by preventing the sale of any milk which may be found to be unwholesome or adulterated.

In order to accomplish this purpose the inspection of the milk supply is necessarily divided into seven steps: First, the farm or dairy where the milk is produced; second, the transportation from the dairy to the creamery; third, the creamery; fourth, transportation from the creamery to the city; fifth, transportation from the railroad station to the retail store; sixth, the retail store, and seventh, the household in which the milk is kept prior to its use.

It is, of course, understood that the department of health has no authority outside of the geographical limits of the city, but the sanitary code provides that "No milk shall be received, held, kept, offered for sale or delivered in the City of New York without a permit from the Board of Health," and the board can withhold or rescind this permit if insanitary conditions exist at the dairy or creamery where the milk is produced or handled.

It is also provided by the sanitary code that "No milk which is watered, adulterated, reduced or changed in any respect by the addition of water or other substance, or by the removal of cream, shall be brought into the City of New York or held, kept, sold or offered for sale at any place in said city." The term "adulterated milk" as used in this section of the code means:

First.—Milk containing more than 88 per cent. of water or fluids.

Second.—Milk containing less than 12 per cent. of milk solids.

Third.—Milk containing less than 3 per cent. of fats.

Fourth.—Milk drawn from animals within fifteen days before or five days after parturition.

Fifth.—Milk drawn from animals fed on distillery waste, or any substance in a state of fermentation or putrefaction, or on any unwholesome food.

Sixth.—Milk drawn from cows kept in a crowded or unhealthy condition.

Seventh.—Milk from which any part of the cream has been removed.

Eighth.—Milk which has been diluted with water or any other fluid, or to which has been added, or into which has been introduced any foreign substance whatever.

Ninth.—Milk the temperature of which is higher than 50 F.

At the present time New York City employs thirty milk inspectors. Fifteen are assigned to duty within the city and fifteen to the inspection of the dairies and creameries.

The area from which milk is supplied is divided into districts, and the men who are assigned to country work live in their districts and devote all of their time to the department's work, reporting once each month at the office of the department of health in New York City for any instructions which it may be deemed necessary to issue to them.

This country inspection is conducted in a systematic manner, the men going from creamery to creamery, remaining at each one until all of the farms supplying that particular place have been investigated and reported on. These reports are mailed to the department, where letters to the operators of the farms are prepared, embracing all of the necessary recommendations to make the farms sanitary and to safeguard the production of milk at that particular place. These letters of instruction are forwarded to the creamery operator for distribution among his dairymen.

In addition to the letter of instruction the department sends to each creamery operator and dairyman rules and regulations to be observed in the care of cows and handling of milk. These rules are printed on a large sheet of linen and are to be posted in each barn or creamery building.

During 1906 14,085 inspections were made outside of the city. The creameries have all been inspected, many of them several times. The dairies are being rapidly covered.

In making these inspections certain fundamental conditions are always inquired into, namely, that an ample and uncontaminated water supply be furnished to the creamery; that an ample and satisfactory method of disposing of the drainage from the creamery be installed; that all milk while being handled for bottling or canning and while being stored in the creamery be kept at such a temperature as to prevent the undue growth of bacteria, and that the milk be protected from the liability of contamination by flying particles of dust and dirt.

At the dairies the main points inquired into are cleanliness of barns and cows, proper drainage, sanitation of the barns and yards, disposal of refuse, health of cows, conditions of milking and transportation of milk to the creameries, care of utensils, health of members of the dairymen's families and condition of water supply. All of this information is tabulated on cards and mailed to the office in New York.

During the early part of this work many extremely insanitary conditions were found. The situation in many instances was beyond hope of correction. A number of dairies were closed, as the improvements and alterations recommended amounted practically to entirely rebuilding and reestablishing the dairy. No amount of pasteurization could ever make milk produced in such surroundings fit for human consumption. In fact, pasteurization can not atone for filth. Preventive measures are better than corrective ones, and whatever opinion may be held as to the relative necessity of pasteurization, the essential feature of a pure milk supply is that the milk be produced under clean conditions and that it be kept clean.

The fact that the farmers are without a market for their milk unless they comply with the rules of the department has been a potent influence in causing them to comply with our orders. The creameries are practically all conforming to our regulations and the dairies and farms are being rapidly put into a sanitary condition.

The next step in guarding the milk is the securing of proper conditions on the railroads for its care in transit from the creameries to the city. Conferences have been held with the officials of the railroads directly concerned in this transportation. In practically every instance

these gentlemen have met the suggestions of the department most cordially. Large and well-planned refrigerator cars have been added to the service. All of the railroads are erecting or have erected icehouses of great capacity in order that they may supply their shippers with a sufficient quantity of ice to carry them through the warm and critical months of the year. As a result milk is now transported under excellent conditions and the required maximum temperature of 50 F. is almost universally maintained. As it is a well-known fact that in milk kept at or below this temperature bacteria multiply slowly, if at all, particular stress is laid on this point. At the depots or receiving stations in the city inspectors are at hand to watch the milk as it arrives. If there is any question as to the proper icing of the cans a thermometer is used and all milk found to be above 50 degrees F. is promptly condemned and destroyed.

In New York City there are 14,107 dealers holding permits for the sale of milk. When an application for a permit is made a copy of rules and regulations is handed to the applicant and he is instructed that unless the conditions under which he proposes to sell milk conform to these regulations his permit to sell milk will be denied. After the application has been received an inspection is made of the premises by an inspector of the department. If the premises and conditions are found to be suitable the permit is granted.

The city is divided into districts, each in charge of an inspector. The latter makes frequent reinspections of all places where milk is sold and he is held responsible for the conditions in his district. At each inspection sanitary conditions are noted, the milk is inspected and tested for temperature and possible adulteration. In case the latter is suspected samples are taken and sent to the laboratories of the department for analysis. Doubtful specimens are subjected to bacterial count. If the milk is above the proper temperature it is promptly confiscated. If it proves to be adulterated a warrant is obtained for the arrest of the dealer. The usual procedure in such cases is for the magistrate to hold the defendant for trial in the court of special sessions. Conviction usually results in a fine, and at the second offense the deparment revokes the dealer's permit.

During 1906 130,871 inspections and reinspections were made in the city, 138,505 specimens of milk were examined, 41,395 quarts of milk were destroyed, 678 arrests were made and fines were imposed amounting to $13,045. In this connection it is interesting to note that during 1905 $16,435 was collected from fines. As the inspections are equally rigorous, and the judgments even more severe than formerly, it shows a marked improvement in the character of the milk sold.

The question of the control of the milk supply after it reaches the consumer and before it is used is the most intricate one with which we have to deal. The proper care of milk in the household can only be consummated by properly educating the public as to its importance.

As a large proportion of the diarrheal diseases of infancy are due to the ingestion of impure milk the matter must be dealt with by the health authorities. This evil is at its height during the summer months, and for many years the department of health of New York City has endeavored to cope with it by means of its "summer corps." The physicians and nurses constituting this corps canvass the tenement district and by means of oral and written instructions demonstrate to the mothers the necessity of the proper care and preparation of milk for the baby. Pasteurization is urged, tickets for ice from the *Herald* free ice stations are issued, and every effort is made to see that the people are educated as to the prime importance of this subject.

The milk supply of New York City at the present time is better than it has ever been. It is constantly improving and the solution of the whole problem is simply one of expansion. Following out the present system, our need is for more inspectors, so that the inspections of the farms, creameries and stores can be made more frequently. It is perfectly possible to insure a perfectly pure milk supply to any city if systematic inspection is maintained and the dictum of "clean up and keep clean" is enforced.

Early in this year an important addition was made to the sanitary code of the Board of Health. It provides:

> It shall be the duty of all persons having in their possession bottles, cans or other receptacles containing milk or cream, which are used in the transportation and delivery of milk or cream, to clean or cause them to be cleaned immediately on emptying: and no person shall use or cause or allow to be used any such receptacle for any purpose whatsoever other than the holding of milk or cream, or receive or have in his possession any such receptacle so used or which is unclean, or in which milk or cream has been allowed to stand until offensive.

This section is simply in line with our constant efforts toward ultimate perfection.

As a special branch of the work the investigation of the milk supply in all instances of typhoid fever should be mentioned. In each case the attending physician is supplied with a card requesting information as to the disease and all possible sources of infection. The name of the dealer supplying milk to the family is obtained. The dealer is visited by an inspector from the department and a rigid investigation concerning the milk is carried on, the milk being traced back through the creamery to the dairy and all possible avenues of infection carefully traced.

In order to obtain a consensus of opinion as to ways of bettering our methods of milk inspection the mayor of New York, the Hon. George B. McClellan, early this spring appointed an advisory milk commission composed of the following eminent physicians: Drs. L. Emmett Holt, A. Jacobi, Joseph D. Bryant, T. Mitchell Prudden and Rowland D. Freeman. This commission reported to the mayor on May 22 of this year, and I will briefly state some of their findings and conclusions.

The report states that the scope of investigation covered every stage through which the milk sold in this city passed from the cow to the consumer; that milk obtained from a healthy cow, in a proper manner, is always wholesome, and never a source of danger if it is kept cool and uncontaminated and consumed within a limited time, but at the same time is a substance in which germs multiply rapidly under conditions favorable for their growth; that these contaminations arise from dirty surroundings, from milking a sick or dirty cow, from milking with dirty or wet hands, by the use of dirty utensils or contact with impure water or by keeping milk at a warm temperature favorable to the propagation of germs.

In regard to tuberculosis, the report states:

> The risk of transmitting tuberculosis through milk from cows to man is very slight unless the disease in the cow is in an advanced form, or is present in the udder. Even this slight

risk is considerably lessened when such milk is mixed, as it generally is, with that of healthy cows before it is sold. We believe that this danger has been greatly overestimated in the public mind and that it can best be met by systematic inspection and condemnation of cows revealing tuberculosis on physical examination.

To secure a good milk supply it is of the first importance to educate the farmers regarding the measures which alone make this result possible, and afterwards to see that the rules relating thereto are carried out. Since for the most part the contaminating agents which render milk dangerous are introduced at the farms, the production of good milk demands that the farmers be educated to as to secure this result, and also that proper surveillance be exercised.

To have efficient inspection of the milk business of New York City at least 100 inspectors for the country districts from which the supply is drawn, in addition to the fifteen now available, should be employed.

The work of the corps of inspectors should be two-fold: first, to point out to the producers of milk the conditions under which safe milk can be furnished; and, second, to determine that these conditions are secured before the milk is permitted to be sold in this city. These inspectors should possess such kind of education and experience as will qualify them to work intelligently. They should be familiar with farming by experience, and in their selection, preference should be given to men educated at good agricultural schools. They should be honest and possessed of good judgment and discretion. A certain proportion of them should be veterinarians, and a certain proportion physicians, so that both the diseases of the cattle and those of persons concerned in the production of milk can be promptly and effectively recognized and isolated.

Various recommendations are made as to labeling of bottles and cans with the name of the farm or creamery from which the milk was shipped, and concerning the control of the sale of milk at retail stores.

The report also states:

Notwithstanding, after all safeguards that may be imposed by education or otherwise, there will be cases in which unsafe milk will be produced or offered for sale, and all such milk must be judged on its merits. The commission, therefore, recommends that the Board of Health should, according to circumstances, require efficient sterilization or pasteurization of all milk which it finds unsafe for consumption as raw milk, on account of a suspicion of the presence of tuberculosis or other disease in the cows or insanitary conditions at the dairy, or a persistent high bacterial content. But in every instance milk so heated should be rapidly cooled to at least 40 F., and be put, after sterilization or pasteurization, into sterilized containers under aseptic precautions.

BOSTON'S CAMPAIGN FOR CLEAN MILK.*

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BOSTON.

After a persistent and successful contest against adulterated skimmed and preserved milk, covering a period of over twenty years, the city of Boston, in 1904, through its Board of Health, laid the foundation for further improvement by inaugurating a campaign having for its ultimate aim the application of cleanly conditions and refrigeration of its milk supply. An account of this movement, as well as that of its influence on the inception of new methods governing the production and traffic in milk, is the province of this paper.

The initiatory step was the adoption of a standard limiting the number of bacteria in milk to 500,000 per cubic centimeter, and prohibiting the sale of milk having a temperature higher than 50 F. Other regulations looking to a betterment of the milk supply were adopted at the same time, and these, together with such changes as seemed advisable from observation and progress, are now in operation.

A summary of a portion of the other regulations follow: Milk is required to be the product of healthy animals and to be strained and cooled in clean rooms separate from those in which animals are kept. All utensils used in its production and sale are to be properly washed and sterilized. Prompt notification of the occurrence of contagious diseases in those engaged in the sale or distribution of milk or in their immediate associates must be made to the board. Milk on sale in shops is not allowed to remain uncovered outside the cooler, box or refrigerator in which it is kept and sold, and the use of separate and properly drained ice chests or coolers for milk is recommended and encouraged; and the sale of milk in a room used wholly or in part for domestic purposes is prohibited.

The adoption of a bacteriologic standard by the Boston Board of Health has been decried and the subject of scoffing, but the example of that city has since been followed by other municipalities, until now nearly twenty cities are conducting bacteriologic investigations of milk supplies. This outcome is fortunate, for from multiplication of work of this character great progress may be expected.

The examination of samples procured from the cars on arrival showed that 87.6 of samples taken in 1905 conformed to the regulations of the Board of Health, while in 1906 89.98 per cent. of samples reached this standard. These results appear in Table 1.

TABLE 1.—BACTERIOLOGIC EXAMINATION OF MILK SAMPLES FROM CONTRACTORS. TAKEN FROM THE CARS ON ARRIVAL.

Year.	Under 500,000 Bacteria per c.c. Per cent.	Above 500,000 Bacteria per c.c. Per cent.	Under 50,000 Bacteria per c.c. Per cent.	Under 100,000 Bacteria per c.c. Per cent.
1905	87.60	12.40	59.80	74.90
1906	89.98	10 02	62.33	72.67

In connection with the examination of milk from contracting firms, the results obtained from the supplies of the different concerns are of value.

Figure 1 presents graphically the comparative bacteriologic standing of the firms for 1905 and 1906, and in addition shows the percentage of infected milk (to which subject reference will be made later) for the same years. With one exception (contractor B), each supply denotes an increased percentage during 1906 over 1905 of samples complying with the bacteriologic standard, and at the same time a marked diminution in the quality of infected specimens.

Bostonians are in a sense slaves to custom in the matter of delivery of milk. They expect their milk to be left at their doors in time for breakfast surmounted with a layer of cream, and in order to satisfy this demand the milk delivered in the morning is that of the bottling of the day before. Thus the milk is a day older than when it reached the city; and even when it is kept under conditions unfavorable to bacterial growth, the latter continue to develop—the extent, of course, depending on the surrounding conditions. It is of interest to trace this milk bacteriologically as it is being delivered from wagons, or is offered for sale from shops. These results appear in Table 2.

These results, by comparison with those obtained by the examination of samples from the cars, show the

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

detrimental influence of age and handling—changing from one vessel to another—on milk. But pronounced as is this development of bacteria in the wagon samples, there is no such wealth of bacterial content as exists in the shop milk which is older than that obtained from teams. The shop milk is subjected to further handling and mixing while on sale, to contamination from dust, and from non-sterile containers in the shops, as well as from drippings from pitchers or other vessels brought to the stores by customers.

TABLE 2.—BACTERIOLOGIC EXAMINATION OF MILK SAMPLES FROM WAGONS.

Year.	Under 500,000 Bacteria per c.c. Per cent.	Above 500,000 Bacteria per c.c. Per cent.	Under 50,000 Bacteria per c.c. Per cent.
1905.....	54 40	45.60	18.00
1906.....	52.21	47.99	16.75

Of these store supplies containing over 500,000 bacteria to the cubic centimeter in 1906, 84.29 per cent. contained over 1,000,000 bacteria to the cubic centimeter, which affords ample proof of the poor quality of milk from this source.

TABLE 3.—BACTERIOLOGIC EXAMINATION OF MILK SAMPLES FROM STORES.

Year.	Under 500,000 Bacteria per c.c. Per cent.	Above 500,000 Bacteria per c.c. Per cent.	Under 50,000 Bacteria per c.c. Per cent.
1905	28 50	71.50	4 90
1906.....	18.99	87.01	3.14

Too much can not be said against the use of shop milk as a food for infants. It is a dangerous expedient to resort to milk of this type as sustenance for the young, and while the danger is great at all times, it is especially pronounced during the warm months of the year. Convenient as shop milk may be as a source of supply to purchasers, the employment of such milk as a food for infants is both wrong and inexcusable. Often the action

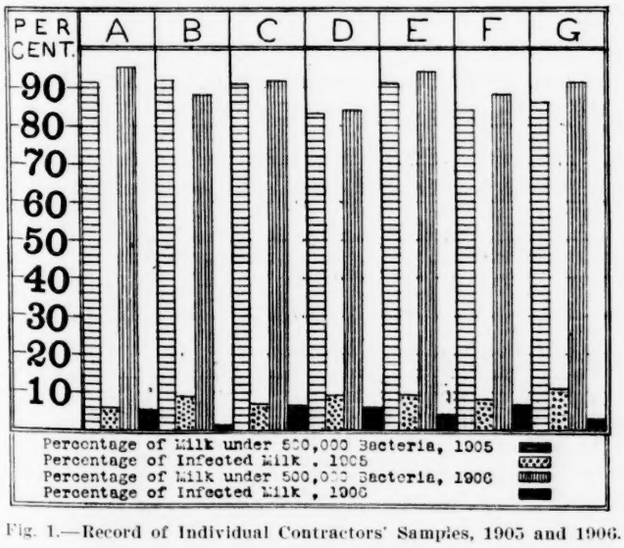

Fig. 1.—Record of Individual Contractors' Samples, 1905 and 1906.

of this milk with infants is not that of milk, but of a poison, and its use should be universally disapproved The stamp of condemnation can not be too quickly placed on the employment of shop milk for this special purpose.

Despite the fact that the number of shops engaged in the sale of milk is constantly increasing, unless a change is made which results in improving the quality of milk sold, it is believed the time is not far distant when there will be a significant lessening of the number of these dealers. The eradication of shops where only a few quarts are sold daily is a certainty, for they are a menace to the community. By temperament many of the owners and employés of these small stores are unfitted for the proper conduct of the milk business, even where the surroundings and equipment are adequate.

Fig. 2.—Record of Individual Contractors' Samples, 1905 and 1906.

In time the right to deal in milk may be considered as much of a privilege as that for the sale of spiritous liquors. On the ground of public utility there is ample justification for stringent regulation of the traffic, and a reduction in the number—if not the classes—of middlemen, can not fail to result advantageously. One experiment in the sale of shop milk is already being made in Boston, namely, that of the sale of bottled milk just as bottled and received from the milkman. If, as it is planned, this milk is sold to consumers in unopened bottles, the opportunities for impairment are decreased, and for this reason the test is beneficial and worthy of encouragement.

The continuous decrease in the percentage of samples for the two years which complied with the bacteriologic standard of 500,000 bacteria to the cubic centimeter, from the time of receipt of the milk by the contractors and its subsequent delivery from wagons or sale from stores, is illustrated by Figure 2.

This affords conclusive proof of the influence of repeated handling and age on this product, as well as the urgency for increased care by dealers and rapid and direct delivery to consumers, even though such change

may eliminate the shopkeeper as a factor in the sale of milk. Partially from prevailing custom—and for this both dealers and consumers are blamable—much of Boston's milk supply is allowed to become stale and acquire bacterial affluence between the time of its arrival in the city and receipt by householders. The remedy for this impairment rests largely with consumers, on whom responsibility for the present condition of the milk situation largely devolves.

For practical and commercial purposes, the Boston Board of Health prohibits the sale of milk having a temperature above 50 F., but a lower temperature is more advantageous. A liberal interpretation of a temperature standard as applied to this fluid means cold milk and the colder the better.

Naturally, the most work in maintaining a cold milk standard is done during periods of high temperature. At such times many temperature tests are made. These include taking the temperature of the milk as it arrives from the country, also as it is being delivered from wagons or sold from shops. Throughout the year the temperature of all samples for bacteriologic examination is taken. Where high temperatures are found warning notices are sent the offenders. Whenever the notices relate to milk found at the cars on arrival from the country, the warning cards are sent to the contractors, and by the latter remailed to the producers in the country. If the warm milk is found on a wagon or in a store, the notice is sent to the owner. In most instances this method brings good results, but in exceptional cases more stringent measures are required to attain the desired end. This means prosecution in court, and fines of from $5 to $25 have been imposed in these actions. As ice costs less than the payment of fines, the imposition of a penalty results in bringing about the condition wanted, namely, that of keeping the milk cold.

A feature not to be overlooked in connection with the temperature problem is that of the influence of summer heat on milk after delivery by the milkman. In summer, milk is usually left on the door steps of houses and there allowed to remain until breakfast time, and occasionally, if the location is right, the milk bottle becomes a target for the sun's rays. During the interval from leaving the milk until the serving of breakfast, many hours may have elapsed, and in warm weather—even if the milk was cold when delivered—the conditions are favorable to a marked increase in temperature, consequently it is important that milk should be iced as soon after delivery as possible. Similar conditions govern the delivery of milk at shops, and the same precautions against exposure to high temperatures should prevail. The constant maintenance of a low temperature at every stage of handling is essential for the checking of bacterial development in milk.

Another advantage accruing from bacteriologic control of milk is that it affords an opportunity for the detection and exclusion of specimens which are the product of diseased animals. In connection with this subject, Harrington[1] asserts that "there is still another group of bacteria commonly present of vastly more importance than the peptonizing species, namely, the pyogenic species, which are associated with the most common of all bovine diseases, garget or mammitis." Milk from these diseased animals is characterized as infected and is distinguised by the presence of streptococci, or by streptococci and an excess of pus, or by excess of pus alone. Evidence is not lacking that these noxious products when present in milk used as a food, may produce disturbances in the human economy; but regardless of this danger, esthetic considerations alone are sufficient to render this type of milk repugnant.

Although attention is being gradually directed to milk of this character, the subject demands the fullest consideration from those responsible for the quality of public milk supplies. Not enough attention is given to the condition of the animals used in milk production, and there is abundant evidence that reliance solely on the integrity of dairymen to withhold the milk of unhealthy animals from the supply sent to the market, results frequently in insufficient protection to the public. To the majority of dairymen, the cow is a milk machine, valued solely for quantity of product, and whether that product be normal milk, or milk plus streptococci or other objectionable contaminations, if it has the appearance of milk the public gets it in instances all too frequent. Even where the circumstances are such that the abnormal conditions in animals are apparent from obvious external indications, the evidence is not utilized for the public good excepting in rare instances, because it would entail the loss of a few quarts of milk.

Beginning in January, 1905, and since that date, the Bureau of Milk Inspection has insisted on the exclusion of these infected specimens, and a persistent search has been made for their presence. The majority of this work has been done on milk obtained at the cars just as it arrives from the country, and so a large proportion of these samples denoting infection are from this source. Where contaminated milks are found, contractors are immediately notified to stop bringing the milk from the dairies at fault into the city until the source of the trouble is located and eliminated. Where infected milk was found in the possession of a dealer other than a contractor, warning notice was sent the offender, and when possible the milk was traced to its source and the supply stopped. There has been an encouraging diminution in the number of these samples, as will be observed from the following data:

In 1905, of the 5,559 samples from all sources examined bacteriologically, 583, or 10.48 per cent., showed the presence of streptococci, pus, or pus and streptococci. Of the 5,007 specimens examined in 1906, only 246, or 4.9 per cent., indicated a streptococci, pus, or pus and streptococci content. These results are summarized in Table 4.

TABLE 4.—INFECTED MILK SAMPLES.

Year.	Number of Samples Examined.	Per cent. of Infected Samples.
1905	5,559	10.48
1906	5,007	4.90

This improvement is gratifying and no doubt attributable to the persistent exclusion of milk of this character from that permitted to enter the city. It has been brought about only by continuous and untiring effort, and not without grumbling and protest, but as none of the objectors have been willing to admit that they would knowingly consume milk thus infected, but little value could be attached to the protestations.

How the producer is to know that milk is contaminated is a query often propounded. He can at least be more observant of the health of his cows and not sell milk from animals whose condition is questionable; he should also exclude from the public supply the milk from cows just prior to and after the calving period. The

1. Bulletin State Board of Health of Massachusetts, December, 1906.

regulation of the Boston Board of Health on this subject is specific. It provides that "no milk shall be sold, offered for sale, or distributed in the city of Boston which was drawn from cows within fifteen days before, or five days after parturition." Before and after the calving period milk is subject to pus contamination, and many of the specimens so polluted, it was later ascertained, were obtained from cows approaching or following parturition. Greater care should be exercised by producers with milk of this character.

An attempt has been made to procure information concerning each case of infection, as to the actual condition of the animals at the faulty dairies. To a certain extent the bureau has been handicapped in these investigations for the reason that contracting firms have to be depended on as channels for information. In many instances a praiseworthy effort was made to ascertain and supply the facts. This knowledge, where obtainable, not only demonstrated the value of and necessity for this work, but disclosed conditions which, although of scientific interest, did not accelerate desire for this kind of food. It also demonstrates, in instances much too frequent, the utter lack of care in keeping the milk of animals of apparent abnormal condition from the market supply. More attention to quality and less to quantity is a desirable determination for milk producers.

Prior to the adoption of these regulations by the Board of Health, very little had been attempted or accomplished by the contracting or wholesale milk firms in improving the condition of the dairies or the methods under which milk was produced. So long as the product arrived in the city not faulty from the standpoint of taste or odor and was sweet enough when delivered to satisfy customers, or, in other words, was a salable commodity, it was acceptable to contractors. But these regulations brought a radical change for the reason that under the former prevailing methods, which were too often shiftless and faulty to a degree, milk was being produced impregnanted with cow dung, hair and other filth, and overloaded with bacteria, both from this cause and from insufficient cooling. This milk in many instances largely exceeded from the bacteriologic standpoint the requirement of the board.

To improve the product was the end in view, and while this desire may have been at first largely founded on necessity, it has developed an earnest effort on the part of some of the contracting firms not only to comply with the requirements of the board, but to have the product of as good quality as care, observation and experience can make it.

The methods pursued by the individual firms for improving the milk supply, while varying in details, all tended toward the same objective point. Printed matter was used to a large extent in this campaign for clean and cold milk. In this manner valuable information was given the producer as to the best method of stabling cattle, the proper lighting and ventilating of stables, the necessity of having the cows clean and kept in a part of the stable from which other animals are excluded, the undesirability of having a person of untidy habits about a dairy, the proneness of milk to absorb odors from surrounding objects, and the best manner of protecting it from such contaminations; directions for the proper cleansing of all utensils used in the handling of milk, necessity and methods for its rapid cooling and being maintained at a low temperature, urging generous supplies of ice with plans for its storage, also reasons for providing a separate room for handling milk.

Inspections of dairies are also made, either by paid agents or by members of the different firms; one concern employs an inspector who devotes his whole time to this work; another has a veterinarian who gives one-half day of each week to visiting the farms supplying his firm with milk, and others have men in their employ who are required to give a portion of their time to the inspection of dairies. In this manner faulty methods are brought to the dairyman's notice, and suggestions for improvement made. In addition, these inspection trips serve a good purpose, as they stimulate the farmer to constantly maintain better methods, as he is unaware when the next inspection trip will be made. Four firms resort to the method of personal inspection and find the results satisfactory. Some of the contractors take the temperature of the milk as it is delivered at the receiving stations and issue warnings to those producers who send milk insufficiently cooled. Several of these firms have inserted in their contract with the farmer a clause requiring the milk to conform to the Board of Health standard, and to be cooled to a temperature of 50 F., or lower, within an hour of milking. During 1906, three of the contracting firms notified their producers that in future no milk would be received from farms not supplied with ice. Many meetings were arranged throughout the country at which the subject of a better milk supply was discussed with the farmers. An effort has been made by all of these concerns to lessen the dirt content, and one of the firms makes frequent tests of the milk as received in the city to ascertain whether or not the quantity of dirt is excessive. The test is a rough one, but it has the advantage of ready application and serves as an object lesson, filthy but effective. A filter of absorbent cotton is utilized. This is held in position by a wire support at the bottom of a funnel of special construction, and through this the milk from the suspected can is passed, the dirt collecting on the cotton. The filter and dirt are then dried, and if the filth is in large quantity, the filter and dirt are mailed to the farmer to emphasize the necessity for greater cleanliness. It is true that a test of this description is not, strictly speaking, scientific, but results are the true indications of value, and that this method is a success has been demonstrated conclusively to this firm's belief by bacteriologic investigation. From the fertilizer standpoint, if from no other, the farmer has an opportunity to see that he is wasting valuable material.

In addition to the course of action of these firms previously outlined, the establishment of laboratories, solely for the bacteriologic examination of milk, by six of the contracting firms, must not be overlooked. It is an indication that this work is considered of value from a purely commercial basis; the fitting up of these laboratories was voluntary in every instance, and the cost of equipment, together with the salaries of the bacteriologists employed, add a considerable amount to the expense account of each concern. The work of these private laboratories has been of much assistance in improving the quality of Boston's supply, for in the two years of their operation between 40,000 and 50,000 examinations of milk have been made, and in instances in which large numbers of bacteria were found producers were notified of the quality of their supply and cautioned to use more care. These notifications were followed by repeated examinations of the product of the dairy at fault, until the quality showed improvement.

The consensus of opinion with contractors is that the bacteriologic examination of milk has already proved

beneficial. One firm states that this is evidenced by the fact that 75 per cent. of the samples received contain less than 50,000 bacteria to the cubic centimeter, and over 40 per cent. contain not more than 10,000 bacteria to the cubic centimeter. The same firm is convinced that under bacteriologic supervision the number of samples containing less than 50,000 bacteria to the cubic centimeter has greatly increased. Other concerns state that the dairies investigated on a bacteriologic basis have shown improvement. These opinions are practical endorsements of this method of oversight of milk supplies. Not all of the firms have pursued the methods outlined, but they have all done something in the way of improvement. Thus it is seen that those engaged in the milk business may be important factors in bettering conditions surrounding the milk supply. The cooperation of dealers is an adjunct not to be despised; on the contrary, their support is to be enlisted and encouraged. Without their aid adequate protection to the consumer is made more difficult.

That the wholesale firms in Boston have rendered valuable aid is beyond dispute, and in so far as they have assisted the movement their efforts should be given the fullest recognition. Their example is worthy of emulation by large concerns in other cities.

While bacteriology is an important factor in the control of milk supplies, namely, in ferreting out dirty dairies, in locating insanitary conditions like that of the use of unclean vessels or lax methods of handling while the milk is on its journey from the producer to the customer, as well as ascertaining its condition as to fitness for use as food by the young, sole reliance on this method of control would be a mistake. It must go hand in hand with what may be designated as field work, which as milk is now produced is necessary to efficient progress. Bacteriologic results may be utilized as a guide to the efficacy of this field inspection, the index of success or failure, the silent detective for bringing imperfections to light.

Field work involves supervision of the production of milk, and from the dairy watchfulness over the product until it reaches the consumer. Vital as is this work at every stage of the journey from producer to user, the point of greatest vantage for the attack on the common enemy, dirt, is at the place of production—the fountain head; faults here are lasting, the errors of commission and omission being eradicable.

The supervision of the dairies supplying Boston with milk is at present in charge of the Massachusetts State Board of Health and under the immediate direction of its secretary, Dr. Charles Harrington. This work includes not only the inspection of dairies located in the state but those in adjoining states as well, and, although in its infancy, has already been productive of much good. The inspection involves in brief consideration of the health of the stock, the condition of the cows and their surroundings as to cleanliness, the adequacy of the supplies of light and air, and methods of handling the milk. The board reinforces its actual field work by the publication in its monthly bulletins of a white list, which includes the names of the farms where the conditions are satisfactory. This salutary proceeding is an effective spur to those whose names are omitted from the list.

In connection with this inspection in dairies the proposition has been advanced that local boards of health could not control milk produced outside their jurisdictions. This idea is erroneous; local boards of health possess the right to exclude all milk not produced under proper conditions, and an efficient manner of exercising control is by a proper application of its authority over its licensees, those who hold permits to sell milk from wagons within the city limits. In Massachusetts it is illegal to sell milk without these licenses, and the regulations of the Boston Board of Health provide for a revocation of these permits for non-compliance with the provisions of the regulations. Recent cases serve to illustrate the value of this method of control. Inspection of dairies by the Massachusetts State Board of Health in towns in the immediate vicinity of Boston brought to light several swill farms where an immediate change of conditions was imperative. The milk from these farms was sold to milkmen who were licensed to do business in Boston. These facts were reported by the State Board of Health to the Boston Board of Health and the details of adjustment were by the latter board entrusted to the Bureau of Milk Inspection. The milkmen using this milk were promptly notified of the conditions and warned that unless the necessary changes were immediately made at the farms new sources of supply would have to be procured by each milkman or recommendations for revocation of licenses would be made to the Boston Board of Health. In other words, the sources of supply in question were unsatisfactory and the burden of adjustment was properly placed, namely, on the purchasers and distributors of the milk. The results were highly satisfactory, all of the farmers but one either complying with the requirements of the State Board of Health or disposing of their stock. The farmer in question showed no inclination to make the desired changes and, as his product was to be excluded from Boston, began selling his milk to a milkman in a town adjoining Boston. This state of affairs was communicated to the State Board of Health, which board promptly notified the milk inspector of the town in question concerning the details. This latter official warned the milkman that a continuance of the use of the product of this farm would cause the withholding of his license for the ensuing year, which resulted in the producer being again without an outlet for his supply. To the producer it means loss of market unless he makes the suggested sanitary changes. By such methods the local authorities, working in conjunction with state boards of health, can control sources of milk supply beyond their own borders and insist on and maintain the desired conditions.

In Boston, within a year and a half, there has been a marked change in the method of handling milk cans sent into the country for milk by the contractors. Formerly no attempt was made to clean these cans, and they were returned to the farmer often putrid from decomposition of milk drainings, or after having been employed as containers for swill, broken eggs, coffee or kerosene oil in shops or restaurants from which they were collected. Not all of the cans were of this latter type, but the cans in the best condition contained milk drainings of different degrees of sourness. The unfairness and hardship to the farmer of cleaning such cans is apparent, and after such an object lesson it is not so much a source of wonder that some producers are skeptical over the demand for cleanliness in connection with this milk question.

As an outcome of agitation over this subject the matter of can washing in Boston has been revolutionized, and at present fully 87.5 per cent. of the cans are being washed by the contractors before they are returned to

the producer. Four of the contracting firms wash all of the cans returned to the country; one firm washes one-half of its cans; another all but 200 cans, and one firm washes cans for only those producers who desire cans cleaned. This washing, however, does not relieve the producer of responsibility as to the condition of the cans. Before filling each can should be examined and if found to need further cleansing this should be done before the can is employed for milk.

To further aid the movement for clean milk vessels an effort has been made to prevent the use of cans and jars, which had become much too common, as containers for other substances. Allusion has previously been made to their employment for swill and other objectionable products. Fortunately, general utilization for such purposes has lessened to a noticeable extent, but the impression is not fully eradicated that milk cans are public property and available for use for any desired purpose. To eliminate this idea copies of the state law and of the regulations of the Boston Board of Health relating to the misuse of cans have been extensively circulated, and this step has been reinforced by an office exhibit of misused cans as an object lesson. A lessening of the evil followed, but the subject is one demanding constant attention. Within a few months milk cans were found in different sections of Boston in use as containers of broken eggs, coffee, olive oil, chocolate, blood, molasses, kerosene oil, and for heating water in lunch carts and bake shops. One specimen taken from a bake shop, and at the time of discovery used for the latter purpose, had on the outside an accumulation of baked and carbonized dough of unsightly appearance. Milk cans are more frequently employed as holders for kerosene oil than for any other substances. Such use, however, can only be considered objectionable because of the difficulty of removing the odor of this fluid. Warning notices to offenders and prosecution have also been employed in this campaign for clean milk cans, and in time it is hoped that the impression will prevail that milk cans are to be used for milk and milk alone.

A part of the blame for the misuse of milk cans rests on milkmen, for despite the fact that the cans represent much money to the dealer, the latter either from negligence or fear of displeasing customers does not collect the empty cans promptly and they remain around shops, restaurants and hotels, affording a temptation for use for other substances or becoming offensive in warm weather from putrefying milk drainings. All cans or jars used in the delivery of milk should be promptly collected by the dealer and cleaned for subséquent use.

A possible outcome of the agitation of this milk question may result in the production of milk on gigantic milk farms in localities not too remote from the population to be supplied, to be conducted and governed by modern methods and on as strict a commercial basis as that surrounding the present day successful business. While this suggestion may not form a part of the future solution of this problem, from a contemplative basis solely the idea has advantages.

The present day trend is toward the handling of milk in cities by large concerns, and it must be admitted that the equipment of these large firms in caring for and delivering milk is superior to that of the small dealer. This means the complete elimination of the latter class, excepting those who are engaged in the production of milk and who from advantage of location are enabled to supply consumers directly with fresh milk. These latter should be given the fullest encouragement.

With the present knowledge of this mooted subject, one immediate remedy is the utilization of the product of only clean dairies. Milk from filthy farms or from those not using ice should be under the ban of exclusion.

These are necessary but minor details beside the one of greatest importance, namely that of education of the public. No effort should be spared to arouse consumers to the danger from dirty milk. They must be made to realize the necessity for cleanliness, that the responsibility for a dirty and stale milk supply rests on them, and that they form the pivotal point for solving the problem. But the first essential is for the public to realize and be reconciled to the fact that cleanliness is next to their pocket-books, and that if they want clean milk they must pay for it, for milk plus dirt is more cheaply produced than milk minus that contamination. Consumers must pay for cleanliness. Cow dung as an addition to beefsteak would be abhorred, as a condiment in dressing a salad its use would not be countenanced, in beer or champagne it would be an efficient aid to temperance, yet its presence in milk is daily countenanced, provided the insoluble portion is removed by the dairyman or milkman by some straining device. But the straining does not remove the harmful portion, namely, that which has gone into solution and which once in the milk can never be taken out. It is not visible to the consumer, however, and so no complaint is made, provided the baby is not made sick or does not die as a result of using such milk for food. The absence of a deposit in milk does not signify cleanliness; it is simply a tribute to the straining device adopted for the removal of insoluble excrement. The best method of dealing with the milk and dirt problem is to keep them separate from the beginning; let the divorce proceedings between the two be final and complete, for the damage of union once made is beyond repair.

This then is the text for presentation to the public; they should be made to see that the same dirt to which objection would be made in other forms of food is doubly obnoxious as a milk contamination, because of the adaptability of milk for the propagation of bacteria. But dirty milk is not cheap; on the contrary, it is the most expensive milk which can be purchased, and the appalling infant mortality, with the attendant expense of sickness and death, which has followed its use is ample proof of this contention. The cleanest milk, even though its first cost is more than that of the dirty brand, is in the end the least expensive. Let the economies be with other necessities or with luxuries, but eradicate the false idea of economy by purchasing filthy milk. Cultivate abhorrence for the unclean article.

That the best is the cheapest should be firmly grafted into this milk situation, even if to bring conviction it is necessary to point to the attendant expense of sickness or death of the young. Constant repetition of the danger from unclean milk is at present necessary to arouse the public from inertia and fancied security. Public determination and sentiment are the all essentials to the rapid clearing up of this milk problem. Let the day of its coming be not long delayed!

Fatty Applications to Scalp.—Fatty applications, as a rule, are not well borne by the scalp or any hairy part of the body. When such a selection, however, has been made, the hair must be clipped short, or else, especially in girls, who absolutely refuse to cut the hair, we must have recourse to lotions, preferably aqueous or alcoholic, which invariably act more favorably than unctuous preparations.—N. E. Aronstam, in *Medical Fortnightly.*

THE MILK SUPPLY OF WASHINGTON, D. C.*

G. LLOYD MAGRUDER, M.D.
WASHINGTON, D. C.

During the summer of 1906, notwithstanding the completion of, and the satisfactory results obtained from, the Washington filtration works, it was found, contrary to the general expectation, that there was no diminution in the prevalence of typhoid fever. Owing to the limited force of inspectors under the health officers and the entire absence of a bacteriologic laboratory under his control, no extended investigation into the causation of this condition could be conducted. Consequently, in June, 1906, the District Commissioners requested the aid of the Bureau of Public Health and Marine-Hospital Service toward solving this problem. The work of the bureau covered the conditions that existed within the limits of the District. Very early in the course of the investigations attention was forcibly drawn to the milk supply. A summary of work done was submitted to the District Commissioners in March last. Ten per cent. of the cases of typhoid fever examined were directly traced to milk infection. The study of the methods of receiving, handling, caring for and distributing milk showed a most deplorable state of affairs. This will be shown in great detail in the full report which is to be issued shortly.

On June 6, 1894, I, as chairman of a committee, presented a report on typhoid fever in the District of Columbia to the medical society of the district. This report was afterward presented to the district committees of both houses of Congress and was printed as a public document. While preparing this report the many insanitary conditions connected with the milk supply were noticed. "Contaminated milk" was mentioned as a prominent cause of the disease. Among the recommendations of this committee which were unanimously adopted by the society were: "The construction of works for the filtration of the Potomac water, the only proper method of purification; the abandonment of all wells as rapidly as possible within the city limits. Careful purification and inspection of all dairies in the District from which the milk supply is drawn; and the enactment of a law whereby no milk shall be sold in the District without a permit from the health office. The inspection should cover an examination at the dairies of all possible sources of infection, including the water supply."

Early in September, 1906, I had a conference with the Hon. James Wilson, the Secretary of Agriculture, and discussed with him the insanitary conditions that had been observed on dairy farms, as well as the numerous reports of contaminated waters, as shown by repeated chemical analyses. The advisability was urged of carrying out the recommendation as to dairy farms made by the committee of the medical society in 1894. Repeated examinations of the milk supply in a number of states and the general conditions surrounding the same have been made by the Department of Agriculture. The Secretary immediately took great interest in the subject. Fully appreciating that a study of the sources of supply would be of great value, he directed that careful and thorough inspection should be made of every source of supply of milk to the city from the District of Columbia, Maryland and Virginia.

The results as obtained were from time to time reported. Most astounding conditions were found to exist. Especially interesting were the bacteriologic investigations of the water supply of sixty dairy farms, which were made by the Department of Agriculture in November and December, taken without selection in Maryland, Virginia and the District of Columbia. These showed that but 25 per cent. were under the danger line, considering that 500 bacteria to the cubic centimeter, when uncontaminated with sewage bacteria, is the limit of perfect safety; twenty-seven showed the presence of bacillus coli—45 per cent. A number of wells or springs examined contained over 20,000 bacteria to the cubic centimeter; one contained 27,200.

Two cases of fever were in actual existence on two farms at the time of the examination of the water supply, one in Maryland and one in Virginia.

This knowledge, in the light of the recent reports of Dr. Schroeder showing the presence of the tubercle bacillus in the feces of cows and those of Dr. Soper as to the presence of the typhoid bacillus in the feces of a patient, demands that greater attention should be paid to water supplies showing the colon bacillus. The bacteriologic investigation of the water supply of farms has been continued and additional reports are now available. These show increased contamination, probably the result of spring rains and the warmer weather.

These studies have been found so interesting that the Secretary of Agriculture has ordered a repetition of the inspection of the 1,000 farms supplying Washington. This inspection will include a bacteriologic examination of the water supply of each farm. The Bureau of Public Health and Marine-Hospital Service examined bacteriologically 172 samples of milk during August and September, with an average of 22,134,259 bacteria. The Department of Agriculture supplemented this work by examining 372 samples from October 27 to December 3, 1906, comparatively cool weather, and found an average of 977,315. Recently the same department has examined 130 samples of ice cream. Five of these samples contained less than 500,000 bacteria to the cubic centimeter, the remainder ranged from over 1,000,000 to 364,000,000 per cubic centimeter. These figures draw attention to a most dangerous factor as a probable cause of disease.

The information obtained from these investigations conducted by these two great departments of the government, the Department of Agriculture and the Bureau of Public Health and Marine-Hospital Service, so impressed the District Commissioners that they, on March 30, 1907, addressed a letter to a number of prominent government officials and leading citizens inviting them "to confer with respect to the milk supply in the District of Columbia, and to advise them what further steps should be taken to improve it, especially with reference to the question of employing either certification of milk of standard excellence or the pasteurization of the District milk supply, or both, and what amendments should be made to the commissioners' bill for the better regulation of the milk business introduced in the last session of Congress."

On April 10 the men invited to this conference met and organized the Milk Commission with the following officers:

Chairman.—Gen. Geo. M. Sternberg, Surgeon General, U. S. Army, retired.

Vice Chairmen.—Dr. Harvey W. Wiley, Department of Agriculture, and Dr. Geo. M. Kober, Professor of Hygiene, School of Medicine, Georgetown University.

Secretary.—Dr. W. C. Woodward, District Health Officer.

*Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

Several subcommittees were appointed.

Subcommittee on Infant Feeding: *Chairman*, Dr. Harvey W. Wiley, Chief of Bureau of Chemistry, U. S. Department of Agriculture; Gen. Geo. M. Sternberg, Dr. Stitt, U. S. Navy; Dr. J. W. Kerr, Asst. Surgeon General, Bureau of Public Health and Marine-Hospital Service; Drs. D. P. Hickling, Wm. M. Sprigg, and W. C. Woodward.

Subcommittee on the Sanitary Condition of the Milk Supply: *Chairman*: Dr. Geo. M. Kober, Professor of Hygiene, School of Medicine, Georgetown University. His associates were Drs. A. D. Melvin, Chief of Bureau of Animal Industry, U. S. Dept. of Agriculture; M. J. Rosenau, Director of Hygienic Laboratory, U. S. P. and M.-H. S.; John R. Mohler, Chief Pathologist, Bureau of Animal Industry, Department of Agriculture; Chas. T. Mason, Asst. Surgeon General, U. S. Army; G. Lloyd Magruder, Emeritus Professor of Materia Medica and Therapeutics, School of Hygiene, Georgetown University, together with Messrs. E. H. Webster, Chief of Dairy Division, Bureau of Animal Industry, Dept. of Agriculture, Col. Robert G. Smith, milk producer, and E. Berliner.

The matter assigned to these committees was divided into several subheads and was so carefully and exhaustively considered by men well versed on the subject that copious excerpts from the reports which were submitted to the full commission on April 17 and May 1 and unanimously adopted, are presented in abstract with the feeling that much of value will be given:

Extracts from the recommendations unanimously adopted by the committee to consider milk in relation to the food of infants:

1. The milk which is supplied to infants under the age of 3 years in the District of Columbia should be certified by the health officer, and should contain not more than 10,000 bacteria per cubic centimeter, should be not more than twelve hours old, and should be delivered in artificially cooled packages.

2. The health officer of the district should be authorized to advertise for dairies which will be willing to so modify their barns, stables, etc., if necessary, as to secure a license from him for the production of certified milk under the most modern improved sanitary conditions.

3. Each cow furnishing the milk in the dairy should be tested, under the supervision of the health officer, for tuberculosis or other contagious or infectious diseases, and that any animal so suffering be excluded from the herd.

4. A daily sample, or samples, drawn from the supply of each certified milk furnished to the city should be secured for the purpose of making the bacterial count and determining the chemical composition, etc.

5. Parents and guardians should be urged to use only certified milk, at least for infants' food in the District of Columbia for all infants under the age of 3 years.

6. If private dairies can not be induced to furnish certified milk, the commissioners of the District of Columbia, as a health measure affecting in the highest degree the welfare of the District of Columbia, should be asked, if it can legally be done, to establish a municipal dairy for the purpose of furnishing certified milk for the use of infants under 3 years of age in the District of Columbia.

7. For the purpose of securing modified milk for infants in ill health, according to the prescription of physicians the Milk Commission of the District Medical Society should be requested to secure the establishment of a laboratory under its supervision in which only certified milk shall be used, and in which, by the use of a separator, or otherwise, milk of a definite chemical composition may be prepared from certified milk, in harmony with the physicians' prescriptions relating thereto.

10. The term "certified milk" as used herein is to be applied to milk secured at dairies subject to a periodic inspection, and the products of which are subjected to constant analysis. The cows providing the milk are to be properly fed, free of tuberculosis or other contagious diseases, and housed in clean stables, properly ventilated, and they are to be supplied with wholesome water and food, and kept clean. The milk is to be drawn under precautions to avoid infection, is to be immediately strained and cooled, and packed in sterilized bottles which are to be kept at a temperature of about 40 degrees F. until delivered to the consumer.

VARIOUS DISEASES AND CONDITIONS OF CATTLE THAT MAY AFFECT THE QUALITY OF THE MILK SUPPLY.

BY JOHN R. MOHLER.

The importance of obtaining a hygienic and wholesome milk supply for the residents of this city is recognized by all intelligent people and should require no argument. Public health demands the purity of all milk and milk products. Next to bread, milk is more extensively used as an article of diet than any other foodstuff. It forms a portion of the food of almost every person practically every day of the year. Moreover, unlike many other articles of diet, milk is consumed in most cases in an uncooked state, making it a very dangerous food should it perchance contain any deleterious organisms. The reasons for securing a supply of pure and wholesome milk are so numerous and so important that the consumer should become acquainted with some of the more essential of them in order that he may render assistance in bringing about a satisfactory improvement. Not only is milk a very suitable medium for almost every description of germ life which may gain access to it in its journey from the cow to the consumer, but it may also become contaminated while still in the udder through infectious or poisonous material present in the cow herself. Consideration in this report will be given only to the latter aspect of the question of a wholesome milk supply. In this connection it will be necessary to keep in mind the requirements of an awakened public for a clean and wholesome milk as well as the effect of any unreasonable or irrational demand on the producer which may cause him heavy losses, or even to discontinue his business.

It will also be apparent from the report of the Committee on Sanitation that in order to produce milk in compliance with the requirements hereinafter to be described, certain precautions must be taken which will necessarily entail additional expense on the producer of this higher grade of milk. The customer must therefore expect to pay his portion of any legitimate advance in the cost of production, and such increase in the price of milk due to its improved quality should be considered as money well expended. Furthermore, we can not have good milk of safe quality without a realization on the part of the farmer, transportation agent, dairyman and housewife of the danger in utilizing old, warm or dirty milk. Education is an important factor, therefore, in the improvement of the milk supply which can not be accomplished through laws and regulations alone. In view of these facts it is recommended that the subject be taught in the schools, that popular articles be frequently prepared for the press, that lectures and demonstrations be given in towns and townships, that pamphlets in plain language be prepared by the Health Officers for general distribution, and especially that rules and suggestions, with reasons therefor, be placed in the homes of dairymen and dairy attendants.

MILK FROM UNHEALTHY COWS AS A FACTOR IN THE SPREAD OF DISEASE.

Tuberculosis.—Probably the most important disease of cows from the standpoint of public health is tuberculosis, and it is also the most prevalent. Notwithstanding the announcement of Koch that, in his opinion, tuberculosis in man and cattle is a different disease, it is now the generally accepted opinion among scientists that people, especially children, may become infected with tuberculosis from cattle. It is not known to what extent such infection occurs, nor is it possible to obtain any definite percentage by the method formerly adopted of looking for the primary lesions in the intestinal canal, although much statistical evidence is recorded, showing that even by these figures primary intestinal tuberculosis of chil-

dren has been observed in as high as 45.5 per cent. of the tuberculous cases examined. (Heller.)

Evidence which must be considered conclusive has been obtained by the Bureau of Animal Industry as well as by Ravenel and a number of French investigators, showing that tuberculous infection may take place through the intestinal tract without leaving any lesion in the abdominal cavity, the first alteration being found in the lungs or thoracic glands. Therefore the presence of pulmonary tuberculosis in infants without intestinal lesions is no indication that the disease was not transmitted by the food, and the statistics above referred to are thus shown to be below the true percentage of cases of tuberculosis of intestinal origin. These figures, however, do not give any satisfactory idea as to whether the bacilli entering the intestines originated from human or bovine sources. Owing to this fact, it follows that the only way of determining the infection of people by bacilli of the bovine type will be to study the lesions in the body of as many cases of human tuberculosis as is possible.

The finding of the bovine type of tubercle bacillus in human lesions is the most direct and positive proof that tuberculosis of cattle is responsible for a certain amount of tuberculosis in the human family. Numerous experiments with this object in view have already proven this fact. Thus the German commission on tuberculosis examined 16 different cultures obtained from tubercular lesions in children and found four which were more virulent than is usual for human tubercle bacilli, causing tuberculosis in the cattle inoculated with them, and making 25 per cent. of the cases tested, affected with a form of tuberculosis which, by Koch's own method, must be classified as of bovine origin. In a similar series of tests conducted by the British royal commission on tuberculosis, 60 cases of the disease in the human were tested, with the result that 14 cases were claimed by this commission to have been infected from bovine sources. Ravenel reports that of 5 cases of tuberculosis in children, 2 received their infection from cattle.

Theobald Smith has also reported on one culture of the bovine tubercle bacillus obtained from the mesenteric glands of a child, out of 5 cases examined, and according to a recent paper by Goodale, Smith has recently been at work on 7 other cultures from different children, 4 of which conformed to his idea of tubercle bacilli emanating from cattle. Of 4 cases of generalized tuberculosis in children examined in the Biochemic Division of the Bureau of Animal Industry, 2 were found to be affected with very virulent organisms, which warranted the conclusion that such children had been infected from bovine source. The Pathological Division of the same bureau has likewise, out of the 9 cases of infantile tuberculosis examined, obtained two cultures of tubercle bacilli that could not be differentiated from bovine culture. In Europe so many similar instances of bovine tubercle bacilli having been recovered from human tissues are on record that it appears to your committee entirely proven that man is susceptible to tuberculosis caused by animal infections, and while the proportion of such cases can not be decided with even approximate accuracy, it is nevertheless incumbent on us to recommend such measures as will guard against these sources of danger, when enforced.

The two principal sources of infection from cattle and the only ones necessary to be considered are the meat and milk of tuberculous animals. The fact that most of the cases of bovine tuberculosis above enumerated which occurred in the human were cases of infantile tuberculosis points with grave suspicion to the milk rather than the meat supply. This naturally leads to the question of how and under what condition does the milk become infectious. That milk coming from a tuberculous udder is capable of transmitting the infectious principle is conceded by all who have given the subject any consideration. It has been equally established that in advanced generalized tuberculosis the udder may secrete tubercle bacilli without showing any indication of being affected.

Careful experiments performed by trained and eminently responsible investigators have also demonstrated beyond reasonable doubt that tubercle bacilli at certain times may be present in the milk of cows affected with tuberculosis to a degree that can be detected only by the tuberculin test, so that in a herd of cows in the various stages of tuberculosis it is to be expected that some of them will secrete tuberculous milk, which, when mixed with other cows' milk, makes the entire product dangerous. Even when the tubercle bacilli are not being excreted by the udder, it has been shown by Eber in Germany and Schroeder in this country, that the dust and manure of the stable where the diseased animals are kept are in many cases contaminated with tubercle bacilli.

In a recent examination of the manure passed by twelve cows just purchased from dairy farms in this city and affected with tuberculosis to an extent only demonstrable by the tuberculin test, tubercle bacilli were found in over 41 per cent. of the cases both by microscopic examination and animal inoculations. The danger from this method of infecting milk is impressed on us as consumers when we realize that on an average probably 25 per cent. of all the cows which supply milk to the district are tuberculous, and this is considered to be a conservative estimate, judging from the results of recent tuberculin tests. Vital statistics show that 14 out of every 100 people that die succumb to tuberculosis, while of the remaining 86 more than one-half show lesions of tuberculosis on post-mortem examination, although dying from some other cause...

The statement of von Behring above mentioned is particularly pertinent in regard to the relationship of human tuberculosis to the milk supply, and especially in connection with the results of those investigators who have studied market milk and found from 5.2 to 55 per cent. of the samples examined to contain tubercle bacilli. LeBlanc considers the milk of tuberculous cows dangerous even when bacilli are not present, on account of the toxin it contains. Michellazzi has injected such milk into tuberculous animals and obtained a reaction. To eliminate all tuberculous cattle from the herd, or to pasteurize all milk coming from untested cattle, should therefore be the object of all producers of milk and the sanitarians will be remiss in their whole duty should they neglect to guard against the products of tuberculous animals in their attempts to eradicate tuberculosis from man.

Other Diseases.—Foot-and-mouth disease, anthrax, cow-pox, and rabies may be transmitted by the milk, and while no case of actinomycosis in man has been traced to the use of milk it is desirable that the use of milk of cows so affected should be prohibited, especially when the disease affects the udder. Such conditions as gastroenteritis and septic and febrile conditions may render the milk injurious to the consumer. Local diseases of the udder like Botryomycosis, mammitis, mastitis, etc., may render the milk unwholesome, especially when pus organisms are present. The color, taste and odor of milk may be altered so as to make it unpalatable if not unwholesome: these changes may be due to the food of the cow or to bacterial changes in the milk after it is drawn from the udder. Milk may acquire poisonous properties from the food eaten by the cow. The milk produced shortly before or during the first five days after parturition should not be used.

Recommendations.—In view of the facts above enumerated, your committee desires to make the following recommendations:

1. All cows on dairy farms producing milk for the District of Columbia shall be tagged, tattooed or otherwise marked, for purpose of identification.

2. All milk produced on such dairy farms shall come either from tuberculin tested cattle, which shall be retested at least once a year, or be subjected to pasteurization under the supervision of the health department in case the herd is not tuberculin tested.

3. No additions to any herd, whether tested or not tested, shall be made in the future without subjecting such cattle to the tuberculin test.

4. No license shall in future be granted except to applicants having herds free from tuberculosis.

5. The milk of cattle showing any of the udder affections above mentioned, anthrax, rabies, gastroenteritis, septic conditions or clinical symptoms of tuberculosis, shall not be utilized as human food, even though the milk be pasteurized. Milk from cows 15 days before and 5 days after parturition, and

that from animals receiving any of the deleterious medicaments of foodstuffs previously mentioned shall likewise be excluded.

6. That the veterinary inspectors of the health department make frequent visits to dairies having untested herds, in order that they may discover all advanced cases of tuberculosis, or udder tuberculosis, as early as possible.

MILK SEDIMENTS OR DIRTY MILK IN RELATION TO DISEASE.

BY GEORGE M. KOBER, M.D.
Professor of Hygiene, School of Medicine, Georgetown University.

Every consumer of milk has doubtless observed the presence of more or less foreign matter at the bottom of the bottle in which it is kept; indeed, it is a matter of such common occurrence that it hardly excites our attention, and many are disposed to look on it as a matter of course. Professor Soxhlet of Munich was perhaps the first to point out that these deposits are largely made up of the excrementitious matter from the cow, which adhering to the udder of the animal, gained access to the bucket during the act of milking.

If these sediments are subjected to microscopical examination we will find that they are composed of epithelial débris, hairs of the cow, organic and inorganic dust particles, excrementitious matter, vegetable fibers, bacteria, fungi and spores of every description; fully 90 per cent. of the germs are fecal bacilli—all of which is not only disgusting but extremely suggestive of danger. The number of micro-organisms is largely increased and we know that under a suitable temperature bacterial development and consequent decomposition are materially hastened in such a medium. The greatest danger from milk of this class is the possible presence of ptomains or toxins produced by certain saprophytic germs from the albuminoids of the milk.

The views of Vaughan, Booker, Escherich, Harrington, Kober and others on the relation of saprophytic germs and toxins to cholera infantum and the summer diarrheas in bottle-fed children are gaining ground and will doubtless lead to great reform in the management of dairies. It may be urged that all such modern innovations involve unnecessary hardship, but it should be remembered that by attacking all the various factors concerned in the causation of the disease we may hope for the best results. The reduction in the general mortality in the registration area of the United States from 19.6 in 1890 to 16.2 per 1,000 shows what may be accomplished by preventive medicine and sanitation.

Milk in Relation to Infectious Diseases.—Milk may acquire infective properties after it leaves the udder of the animal. Numerous instances have been observed in which outbreaks of typhoid fever, scarlet fever and diphtheria, by their sudden and explosive character, affecting families living in streets and localities supplied by the same milkman, naturally pointed to the milk supply as a common cause. Dr. Michael Taylor, however, was the first physician (in 1857) to point out definitely that cow's milk might serve as the medium of spreading typhoid fever from a dairy where the disease prevailed. In 1867 he also showed that scarlet fever might be distributed in the same way. In 1877 Mr. Jacob traced a diphtheria epidemic at Sutton to the milk supply, and in 1872 MacNamara traced an outbreak of cholera at Calcutta to an infected dairy. These facts could not fail to sharpen the powers of observation in others, so that in consequence similar outbreaks were more frequently reported. I was enabled to present to the International Medical Congress held in Paris in 1900 the history of 195 outbreaks of typhoid fever, ninety-nine of scarlet fever and six of diphtheria, all traceable to milk supply.

It has been demonstrated that disease germs may not only survive, but in many instances actually proliferate, in the milk, and it is not a difficult matter to point out the many ways by which these germs gain access, especially when some of the employes are also engaged in nursing the sick, or are suffering themselves from some mild infection while continuing their duties, or are convalescent from the disease, and thus infect the milk in handling it.

After the recital of numerous epidemics and milk-borne diseases, I need hardly insist on the necessity of compulsory notification of all infectious diseases, and that milk should not be permitted to leave a farm, dairy or milk-shop during the existence of any of these diseases among the inmates or employés, nor should the latter be permitted to reside in or visit infected houses while engaged in the milk traffic without permission from the health department. The farmer or retailer should, in fact, be prepared by previous instructions to guard the milk supply from these sources of danger and call on the authorities for an immediate inspection. To prevent great loss incident to those restrictions, they may be modified so as to use the milk after proper sterilization under the direction of the health department. There is nothing strained in the requirements of the proposed legislation and by their enforcement we may hope to obtain such a standard of milk as will not only effect a decided reduction in infantile mortality, but will render the dissemination of infectious diseases through the milk supply a matter of history only. Until this is accomplished, we should patronize only such dealers as sell "certified milk," or subject the milk to pasteurization, or simply bring the milk to the boiling point in the household, and, after cooling, keep it on ice; this will not make bad milk good, but it will at least destroy its infectiousness.

SANITARY INSPECTION OF DAIRIES AND DISTRIBUTING DEPOTS.

BY E. H. WEBSTER.
Chief of Dairy Division, Bureau of Animal Industry.

A systematic sanitary inspection of dairy farms and milk-distributing depots are anything but ideal; they are, in fact, about as bad as it is possible to conceive. Stables are poorly lighted, many having no windows whatever, and ventilation is left to care for itself. Little attention is paid to floors, ceilings, walks, or stable yards. Swine, horses and poultry are often found in the same barn with the cows. Manure is not removed, or, when removed, is thrown through an opening in the wall or just outside the door, frequently near the milk room.

The necessary appliances for sterilizing and cooling in milk room are often lacking, making it impossible properly to wash and sterilize pails, cans, bottles and other appliances, or to properly cool and hold at a low temperature the milk before delivery. Milk dealers, as a rule, have more respect for sanitation and have better appliances than the average farm, but some common practices are deplorable. Very few have appliances for sterilizing bottles.

The situation in Washington is not different from that confronting the health departments of most of the cities of any size throughout the country. The public is gradually awakening to the fact that these conditions must be changed. In order to bring about these changes within the district, it is recommended that:

1. A sufficient number of inspectors shall be employed so that each inspector shall have not over 100 farm dairies.

2. These men shall have technical training in the production and handling of milk.

3. The health officers shall have full authority to make rules and regulations, and to enforce the same, so as to safeguard the milk supply of the district from contamination through carelessness, ignorance or malicious intent.

4. The health officer, or any authorized inspector, shall have authority to revoke instantly the license or right to sell milk in the city if the provisions in these regulations are not complied with, where, in his judgment, such violation endangers the health of the consumer.

WATER SUPPLY OF DAIRY FARMS.

BY G. LLOYD MAGRUDER, M.D.
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The influence of a polluted water supply has long been recognized as a most potent cause of disease. Many virulent epidemics have been directly traced to this origin. The literature

on this subject is so full of instances that it is needless to cite additional examples. Immediate closure of such water supplies in cities, when sewage bacteria have been detected, has been universally recommended. The recent report to the District Commissioners by the Bureau of Public Health and Marine-Hospital Service lays special stress on this point.

How much more is this danger augmented when such bacteria are found in the water supply of the dairy farms. It is well known that few farms have the proper facilities for boiling the water that is used for washing the hands of the employés, the dairy utensils and the udders of cows. Such water readily contaminates the milk, which contamination is rapidly increased by the multiplication of the bacteria when the temperature is above 50 F.

In view of the possible presence of the bacilli of typhoid fever and tuberculosis, the question of sewage bacteria in the water supplies of the dairy farms is a much more serious matter than was formerly considered. The knowledge that typhoid fever was 2½ times more prevalent in 1906 in the counties of Maryland than in the city of Baltimore, and the evidence, as stated elsewhere in this report that 148 out of 195 epidemics of typhoid fever attributed to milk were directly traced to the dairy farm, adds to the seriousness of these conditions.

It has been observed that many wells, springs and cisterns are loosely or not at all covered, poorly protected from surface drainage, and, in numerous cases, are located in close proximity to the barnyard or to the household privy, at times even in places that catch the drainage from the same.

The examinations made by officials of the Department of Agriculture during November and December, 1906, in comparatively cool weather, showed that, of the 60 water supplies of dairy farms taken at random in Maryland, Virginia and the District of Columbia, 16 contained less than 500 bacteria per cubic centimeter and were free from *Bacillus coli*—6 below this number contained the colon bacillus. The remaining 44 water suplies contained bacteria up to 27,200. Of these 44, 21 contained the colon bacillus.

These tests warranted the classification of these water supplies as follows: 16 good, 15 fair, 17 suspicious, and 12 unfit for use. From Professor Sedgwick's classification 44 would have been considered polluted. In a recent letter he says: "I should say that all of the wells under consideration which had more than 100 bacteria per cubic centimeter were to be classed as suspicious, and that those having 500 or over were, in all probability, polluted."

The results of those examinations confirm the wisdom of the recommendation made in 1894 by the committee of the Medical Society of the District of Columbia on the prevalence of typhoid fever, for the careful inspection of all dairy farms for all possible sources of infection, including the water supply, and prove that repeated chemical and bacterial tests should be made of the water supplies of every dairy farm supplying milk to the City of Washington. They afford another proof of the imperative need of a well-equipped chemical and bacteriological laboratory for the Health Officer.

Fortunately, many of these insanitary conditions on the farm can be readily and easily remedied by the farmer himself, by the exercise of a little care and at a very trifling cost.

All water, except that above suspicion, used for dairy purposes should be boiled. Those engaged in the handling of dairy products should be required to observe the greatest care as to the cleanliness of their clothes and person. Frequent washing of their hands should be practiced. The source of the water supply should be at least fifty feet from any possible infection, and a greater distance if in line of drainage from any infection.

The wells, springs and cisterns should be carefully walled and covered to protect them from seepage, drippings and dust. A well-built coping, extending a foot or more above the ground would be very effectual. Preferably deep driven wells should be used when possible. Owing to the inclination of the rock formation in this vicinity, these are not always absolutely reliable. When a water supply is found to be polluted, it should be thoroughly cleaned and properly disinfected.

All fecal discharges should be deposited in a safe place, and those from fever cases in addition should be intelligently disinfected. Since freezing does not immediately kill bacteria, careful supervision should also be observed over the supply of water for and the location of ice ponds from which ice is obtained for household and dairy purposes. By observing these simple precautions, which would in no way be a hardship to the producers, much would be accomplished toward securing a better milk suppply.

The series of check experiments conducted during September, October and November, 1906, by the Department of Agriculture and those in charge of the filtration plant, demonstrated its efficiency as a safeguard against typhoid infection from the Potomac River. The report of the examinations of the Potomac Water Supply for March confirms the deduction heretofore made.

COMMERCIAL CLASSES OF MILK.

BY A. D. MELVIN, M.D.
Chief of the Bureau of Animal Industry.

In view of the elaborate manner in which the necessity for a pure milk supply has been pointed out, and of the many obstacles in the way of obtaining such a supply except through vigorous official supervision, it is believed that if the milk supply is divided into three classes as hereinafter described, and an efficient supervision provided, the consumer will be amply protected in securing clean and uncontaminated milk, therefore the following recommendations are respectfully submitted:

That the milk supply of the city be divided into three classes, to be known as Classes 1, 2 and 3. The specifications for certified milk for infants to be the same as recommended by the Milk Commission, and to be known as Class 1.

Class 2 to be clean, raw milk from healthy cows as determined by the tuberculin test and veterinary physical examination. The cows to be housed, fed and milked under good conditions, but not necessarily equal to the conditions provided for Class 1. Pure water as determined by chemical and bacteriologic examination, to be provided and the bacteriologic count of the milk not to exceed 100,000 bacteria per c.c., at the time the milk reaches the city, at any season of the year, and determined by the health department at frequent intervals. Milk to be delivered to the consumer in sterilized containers to be filled on the dairy farm and the temperature of the milk not to exceed 50 F. until delivered to the consumer.

Class 3 to be milk from all other dairies not able to comply with the requirements for Classes 1 and 2. This milk to be clarified and pasteurized at central pasteurizing plants which shall be under the personal supervision of an officer of the health department. These pasteurizing plants may be provided by either private enterprise or by District government, and shall be located within the city of Washington. Class 3 milk shall not be permitted to exceed 60 F. in delivery from the dairy to the pasteurizing plants. The milk from these pasteurizing plants, placed in sterilized containers, shall be delivered to the consumer at a temperature not exceeding 50 F. All milk of unknown origin shall be placed under Class 3 and subjected to clarification and pasteurization. It is also provided that no cows suffering from any communicable disease, or any unfit condition to be determined on physical examination by an authorized veterinarian, shall be permitted in any dairies. It is further provided that cows which do not show any physical signs of tuberculosis on veterinary examination, but which may have reacted to the tuberculin test, may be included in dairies supplying milk of this class.

No dairy farm shall be permitted to supply milk of a higher class than the class for which the permit has been issued and each dairy farm supplying milk of a specified class shall be separate and distinct from any dairy farm of a different class; the same owner, however, may supply different classes of milk, providing the dairy farms are separate and distinct, as above indicated. All milk to be of good composition, free of adulterants and artificial coloring matter. The term "milk" to include both milk and cream.

PASTEURIZATION.

BY M. J. ROSENAU, M.D.

Director Hygiene Laboratory, U. S. P. H. and M.-H. S.

Advantages.—The advantage of pasteurization is that it is a cheap and effective means of preventing the transmission of infectious diseases such as tuberculosis, typhoid fever, diphtheria, scarlet fever, etc., commonly spread by milk.

Disadvantages.—1. Pasteurization promotes carelessness on the farm and dairy, etc. (This may be controlled by proper regulations, inspections and laboratory examinations.)

2. Pasteurization renders milk less digestible. (While it is generally conceded that boiled milk commonly induces constipation, the majority of the evidence plainly indicates that pasteurization has little, if any, effect on the digestibility of the milk.)

3. Pasteurized milk favors the production of rickets and scurvy. (There is no proof to this effect and authorities agree that the danger is slight; and, further, that it may readily be obviated.)

4. By destroying the non-spore-bearing bacteria, pasteurization sometimes allows toxic organisms to grow and produce serious poisons in the milk. (On the other hand, these same poisons are more frequently produced in milk that has not been pasteurized, and this danger may be obviated in pasteurized milk by cooling it quickly, keeping it cold and shortening the time for distribution.)

5. Pasteurization is inefficient as a preservative; the milk keeps only 12 to 24 hours longer than otherwise. (This is really no disadvantage, for the quicker bad milk sours, the better.)

6. Pasteurization injures the taste of the milk. (This is not so, if properly done.)

7. Pasteurization increases the cost of the milk. (True, but it is the cheapest safeguard, and the expense of pasteurization is offset by the keeping quality of the milk.)

Methods.—The milk must be heated to a temperature of 65 C. (149 F.) for 20 minutes, or 70 C. (158 F.) for 10 minutes, as soon as practicable after the milking, in enclosed vessels, preferably the final containers. After pasteurization, the milk must be promptly cooled, kept cold and distributed with promptness.

The advantages so far outweigh the disadvantages that I unhesitatingly recommend compulsory pasteurization of all milk not certified under Class 1 and Class 2 of Dr. Melvin's classification.

DISCUSSION

ON PAPERS BY DRS. GOLER, DARLINGTON, JORDAN AND MAGRUDER.

DR. G. LLOYD MAGRUDER, Washington, D. C., said that Washington holds a unique position in regard to government and is somewhat backward in some points in which it should be forward. It is governed by a board of commissioners, but the laws are enacted by Congress and it is necessary to go to Congress for almost everything. The commissioners have power over certain police regulations, but they can not control without legislation from Congress. The District of Columbia is very close to Maryland and Virginia, and the congressional committees on District of Columbia affairs frequently have members from these states who are influenced by their constituents. For some time, Dr. Magruder said, a senator, who had a dairy farm in Virginia, was on one of these committees. Almost all the legislation which it was attempted to secure for stricter regulations of the milk supply of the District was opposed by this man, because he had trouble in carrying out the requirements on his farm while he lived in Washington. Health officers and commissioners, year after year since 1895, have begged for additional legislation; in 1895 legislation was secured which improved conditions immensely, but it was not sufficiently strong to enable the health officers to do what they should. They are now working for additional legislation.

DR. C. H. JONES, Baltimore, said that the papers on this subject have given him an idea as to what can be accomplished under bad conditions. He stated that at the Scientific Exhibit Hall he had presented some pictures that were taken for the milk exhibit gotten up by Dr. Fulton, secretary of the State Board of Health of Maryland, in the spring of 1906. There are about 108 photographs presenting the conditions within the city, in the suburban district and in the rural district. So far as he has been able to learn, the greatest difficulty is found in the suburban district. Within the city there is a fairly strict supervision—so far as one man can carry it out. The improvement in the milk has been very great; practically no disease except that introduced in the milk in houses, could be traced to these particular dairies. The rural district is far better than what one would expect, as there is no supervision; but Dr. Jones thinks that is accounted for in the following way: The distance that the milk has to come from the stables to the point of distribution within the city, and the fact that the railroads do not provide any means of conveying the milk at the proper temperature compel the farmers to exercise a certain amount of care, as otherwise they know that they can not get the milk to the city and have it remain sweet. On the other hand, the suburban section is a district close to the city where the milk is brought twice daily to the consumers in wagons, not by the railroads. Here is found the greatest amount of filth. The short haul permits the milk to be consumed within three or four hours after milking. Dr. Jones thinks that he can demonstrate a typhoid epidemic, due entirely to milk infection, in the suburban district—not the urban district nor the rural.

DR. W. F. SNOW, Leland Stanford University, Cal., said that California is carrying out three experiments which seem pertinent to the subject. All the speakers have emphasized four things: First, the education of the public through the press; second, the necessity for the establishment of demonstration dairies and experimental farms within public parks, or in similar ways; third, the emphasizing before the public of pure production of milk rather than pasteurization; and fourth, the necessity for field inspection work. In Alameda County, California, the supervisors have established a model dairy in conjunction with their county infirmary. They are spending considerable money in making it what a dairy should be, with the object of bringing the people from the surrounding cities (those near the Bay of San Francisco) to see the place. They are experimenting with a milking machine for the benefit of the public, and are using the milk also in an experimental way (so far as good milk may be an experiment) with the patients in this infirmary, to see whether good milk will show good results in the dietetics of this hospital. Further, in regard to the question of education itself, Dr. Snow has experimented somewhat with some of the high schools in putting before the teachers of biology such blanks and instructions as have been shown in the Section, asking these teachers to go with him, and later with their students to the dairies supplying their communities with milk. The high school students are then asked to write, in their course on biology, papers on their impressions with regard to how fully these rules and regulations are complied with. The effect has been rather amusing, and very encouraging from the point of view of throwing a lot of amateur inspectors into the field; amusing in its influence on the dairymen, encouraging in the public sentiment which it has created in the homes of these school children. Within the last year and a half four high schools (those of Los Angeles, Stockton and some other communities), representing probably 5,000 homes, have decided to put education in public health into the regular school curriculum. Just what they are going to accomplish, or how persistently they will carry it out, no one knows, but at any rate the scheme of instruction in these four high schools includes some sort of simple field-inspection training in examining the sanitary conditions of dairies and other food-production centers. The third experiment of which Dr. Snow spoke is one which seems valuable to those who are in states which have had very little money to draw on for this public work as yet. The United States Government utilizes the best students in the zoologic, biologic and geologic departments of the universities for all sorts of valuable experimental field work. The health departments of the

various states could use the students in biology and physiology fully as well for very careful volunteer inspection work in the field of public health. Merely as an experiment, the State Department of Health in California has been trying such a plan with the students from one of the universities, with a very great deal of value from two points: First, that of supplying the overburdened officers of the health department with accurate, trustworthy facts; second, that of educating many of the young men who will soon be physicians, and, more important still, Dr. Snow said, our voters and trustees or lawyers in incorporated communities, both large and small.

DR. SENECA EGBERT, Philadelphia, said that one important point would be the requirement that milk cans and containers in transit on railroads should be sealed. Under the auspices of the State Commissioner of Health in Pennsylvania, it was found that often the train employés made free with milk in transit; and to get it they used anything convenient, such as a tin cup or glass or the tumbler from the cooler in the caboose, or sometimes the lid of the milk can itself. Another thing that the cities can do, he said, is to insist on far better sanitary conditions in the milk shops and at the distribution points. He also thinks that it would be wise for each city to have one or more model sanitary milk shops so that the public might have a practical example of what such shops should be, and thus might learn to patronize only those of that character. Another idea which has occurred to him as feasible, is that the milk should be delivered to the consumer in an absolutely frozen condition. It could be frozen at the dairy and delivered to the consumer as is ice cream, either in bulk or in blocks, enclosed in paper cartons. Investigations have shown slight changes in the composition and digestibility of frozen milk, but it is doubtful, he said, if these changes are any greater than those which occur when milk is pasteurized. It seems to Dr. Egbert that at very slight additional expense such milk could be supplied and people could be educated to look for milk in the solid form. This would prevent the bacterial growth that undoubtedly occurs if milk is kept at any temperature above 32 F. Newman and others positively state, he said, that 32 F. is the maximum temperature at which the bacteria will not increase in milk, and the plan suggested would prevent any increase from the time the milk leaves the refrigerating plant until it reaches the consumer. Dr. Egbert is inclined to feel that in the ordinary dairy pasteurization it is not a safe thing for the consumer. Pasteurization does not kill all the bacteria; after that process and after the milk regains a temperature of say 60 F., the bacteria may grow and be just as numerous as ever before and the harm done may be just as great as if the milk had not been pasteurized. The ordinary layman, if he gets pasteurized milk, thinks it is free from germs, which is not the case. Milk refrigerated (as it should be) immediately after the milking and kept cooled down to at least 30 F., will be a much safer article to supply to the ordinary consumer than the pasteurized milk.

DR. H. M. BRACKEN, Minneapolis, said that in small communities it is discouraging to try to get people interested in such matters. In Minnesota there are no very large cities where the problem of securing a safe milk supply is a difficult one. He declared that a city with a population of 300,000 or less, and a good farming community around it, should have no difficulty in securing a good milk supply, and that cities with populations of 50,000 or less should have no difficulty in keeping the milk standard near that of certified milk. He referred to the papers and illustrations showing the variations in the quality of milk. The standard of Boston for commercial milk—500,000 bacteria per c.c.—seems liberal enough, yet it appears to be difficult for Boston and New York City to keep up to that standard. The inspected milk of New York (100,000) is rather a high grade milk. In Minnesota an effort was made through the State Board of Health to encourage smaller cities to insist on a better milk supply; and the board, while it is not in the position to give mandatory directions on such matters, did recommend that all the smaller cities should fix a standard equivalent to that of Boston, viz., 500,000 bacteria per c.c. Some of the smaller cities are now taking the matter up and by ordinance are adopting this as a standard. When this standard becomes somewhat general, it will then be possible to move for a still higher standard. He said that if the milk is properly handled it should not be necessary to freeze it to keep it. Certified milk can be kept for some time, and Dr. Bracken thinks that certified milk is certainly superior to milk reduced to a frozen state.

DR. G. LLOYD MAGRUDER, Washington, D. C., said that as a result of this agitation in Washington, one dealer has tried hard to comply with the requirements for inspected milk. He voluntarily offered the producers an additional 3 or 4 cents a gallon for the purpose of getting clean tuberculin tested milk. He has spent $500 in advertising. Before Dr. Magruder left Washington, these advertisings had been going on for ten days, and the dealer said that he had had ten applications for this higher grade of milk—tuberculin-tested and low in bacteria—for which he wanted to charge 10 cents a quart. Dr. Magruder saw Mr. Gordon, the representative of the Walker-Gordon establishment in Washington, the day before he left Washington. He has a depot directly opposite Dr. Magruder's office, where he puts out 1,600 quarts a day. Mr. Gordon says that most of his customers are people coming to Washington on the recommendation of the plants elsewhere, and he can not get over 10 cents a quart for his milk in Washington; and that if he raises his price to 12 cents in September he is sure that he will lose more than one-third of his customers. People want milk at 6 and 8 cents a quart.

SOME ADVANCES IN RENAL AND URETERAL DIAGNOSIS.*

CHARLES LESTER LEONARD, A.M., M.D.
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The uncertainties that frequently surrounded the diagnosis of lesions in the deeper urinary tract have been materially lessened by recent advances in the physical methods of diagnosis. This is particularly true of the intrarenal and intraureteral disorders, where improvements in diagnosis have resulted in a clearer differentiation between the symptoms of conditions that had been grouped as identical; in a more exact determination of the character and location of the lesion; and hence in a more accurate analysis of the indications for treatment, resulting in valuable modifications, more precise operative intervention, and, finally, a marked betterment in results.

The facts that have led to a differentiation in the symptomatology and a more accurate localizing of intrarenal and intraureteral lesions have been derived from the study of the symptoms after an accurate localization of a calculus has been made by the Roentgen method of diagnosis. Thus the localizing symptoms observed as grouped about calculi at different points in the urinary tract have been utilized to locate other than calculous lesions.

These symptoms are not of themselves sufficient on which to base a diagnosis, nor is any method of diagnosis so accurate as to be self-sufficient. The complete study and diagnosis of any renal or ureteral condition can not be made by any one method, and all advance is the composite of advances made in all methods combined. The cystoscope, the ureteral catheter, the wax-tipped bougie, the divided and centrifugalized urines, the clinical history and symptomatology are all important factors in increasing the accuracy of diagnosis. Unfortunately the technic and clinical experience to obtain valuable results by any of these expert methods is as difficult to attain as that demanded of the Roent-

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Fifty-eighth Annual Session, June, 1907.

gen diagnostician, so that expertness in all can not be readily acquired by one person. It should not, therefore, be thought that a diagnostician is limited in his vision because he writes from the viewpoint of the particular method of diagnosis in which through special study and experience he has acquired the right to speak with authority. Nor because he confines himself to what he knows should he be thought incapable of recognizing the merit and progress made in other methods of diagnosis. The specialist or diagnostician so self-centered as to be blind to the worth of other methods and so egotistic as to admit no chance for faults in his own is the slave of an optimism that robs him of any authority to speak in his own department.

As has been noted above, the subdivisions in the symptomatology that aid in locating lesions other than calculus in different portions of the urinary tract have been derived from a comparative study of the symptoms in cases where calculi had been definitely located by the Roentgen method. It is not necessary to study in detail the symptoms of these cases, but only to review those particularly indicative symptoms that by comparison materially assist in localizing the lesions.

The grouping of symptoms is not exact, as there is often an overlapping of symptoms. The differential characteristics in certain cases are, however, sufficiently prominent to assist materially in localizing a lesion.

The variation between the groups of symptoms is rather in the character, location and distribution, as of pain, than in any actual dissimilarity. The severity of the symptoms is frequently as marked in all the groups and depends on the extent of the injury produced by the calculus, the presence or absence of infection and the degree of interference with normal function. The ache, the pain or the colic with tenderness on palpation are present in varying degrees in each case, but differ in their mode of onset, the fulminating point of the acute pain, the direction of radiation and the parts involved. These symptoms vary in prominence, the difference in severity depending on whether the calculus is fixed, partly or entirely movable or obstructive.

The groups of symptoms are naturally subdivided by the points of most common quiescence, impaction or irritation of the calculi. They are, therefore, those of renal origin and those of ureteral. The ureteral are subdivided into those at or above the iliac artery and those in the juxtavesical portion of the ureter.

In the renal group there may be only a dull, persistent ache in the lumbar region with a trace of albumin variable in amount, or to this may be added occasionally a microscopic trace of blood. These symptoms may be aggravated or obscured by the presence of infection and the consequent suppuration. They are intensified and become violent with attacks of typical colic, when a movable calculus becomes impacted in the infundibulum of the ureter and produces obstruction. The onset of the colic attack is sudden, the lumbar ache is constant in intensity, and gradually increasing in severity prior to the attack; the attack subsides suddenly, though the ache may persist. The pain of renal colic is most intense over the kidney. It radiates downward and not upward over the genitocrural nerve. It may pass to the stomach and around the body, but it does not start below the kidney in the line of the ureter and shoot upward. Tenderness on palpation is confined to the kidney, although its area may be increased by the enlargement of the kidney. The psoas reflex is never present.

The symptoms of ureteral calculus vary as widely as those of renal. A small quiescent calculus may produce no symptoms except those of chronic irritation, or in migrating may pass without producing a microscopic trace of blood. On the other hand, calculi no larger than grape seeds produce intense pain and severe hemorrhage, without producing complete obstruction or true ureteral colic. In a patient from whom three small calculi, that had been diagnosed and located by the Roentgen method, were removed by Dr. Endicott of Plainfield, N. J., complete obstruction was produced, though the calculi were no larger than grape seeds. A concurrent infection and hyperpyrexia rendered immediate operation imperative. Calculi are most frequently impacted in the ureter at the ureteroiliac junction and give rise to symptoms that simulate appendicitis. Since their greater frequency has been recognized and attention has been called to this similarity in symptomatology, many more cases have been reported where this error in diagnosis has been made.

The symptoms characteristic of calculus obstruction at or above the iliac artery, especially in cases where repeated attacks have taken place, are a prodromal period of aches, gradually extending up into the renal and lumbar regions and culminating, after increasing in intensity, in the acute paroxysms of ureteral colic. Unless the calculus is expelled, partial occlusion persists, the ache gradually decreasing in intensity but persisting between attacks, and by its gradual increase giving warning of another attack. This gradual increase and subsidence of the lumbar ache is characteristic of ureteral rather than of renal obstruction. In the crisis of acute ureteral colic the pain starts low down in the line of the ureter and radiates upward as well as downward, and is more frequently accompanied by nausea. Tenderness on palpation is found not only over the pelvis of the kidney, but down the line of the ureter.

A calculus impacted at the uretero-iliac junction can often be felt as an exquisitely tender point in the ureter, while the distended ureter above it has often been mistaken for an inflamed appendix. The psoas reflex is characteristic of involvement of this portion of the ureter when it is present. This is exhibited by an inclination to keep the thigh flexed on the body and a disinclination to extend the limb. In the juxta-vesical portion of the ureter the symptoms are more characteristic, but approximate those of vesical calculus. They are generally differentiated because some of the symptoms of renal or ureteral involvement are also present. The lumbar ache is generally absent. Colic attacks are infrequent, unless the calculus has been migrating recently; then the symptoms combine those of vesical involvement. Only in complete obstruction of long standing is a marked hydronephrosis found. Infection is more common and hyperpyrexia usually accompanies an acute and complete obstruction. The psoas reflex is absent. The pain combines the characteristics of ureteral calculus with that of vesical calculus. It radiates upward into the region of the kidney and downward throughout the distribution of the genito-crural nerve. It is felt, as in calculus higher up, in the groin, the scrotum or the labium majus, in the inner side of the thigh and even down to the foot. It is felt, in addition, in the glans penis, or the meatus urinaris of the female, and also along the urethra. The pain is usually felt during, as well as at the end of, micturition. This close similarity to encysted and vesical calculi in symp-

tomatology has led to exploratory cystotomy in two cases in which calculi were subsequently found in the juxta-vesical ureter by the Roentgen examination.

When calculus has been excluded by the Roentgen method, these localizing symptoms are valuable in suggesting the location of the lesion which produces them. Thus a constant lumbar ache without the prodromal increase in severity, with an acute incidence and subsidence of the colic attack, distinguishes renal from ureteral involvement. After a calculus has been excluded they would point to a renal involvement with temporary obstruction due to a displaced or movable kidney with twists and kinks of the ureter or clots, mucopurulent plugs and masses of crystaline débris. Without the colic attacks they are suggestive of incipient tuberculosis, simple pyelitis and nephritis due to oxaluria or phosphaturia.

There are usually more evident signs of these conditions, but only those are mentioned that assist in localizing the disease. In many their location is self-evident as the result of palpation as in large hydro- and pyonephroses and to these these differential symptoms are not intended to apply.

In involvement of the ureter at or above the iliac artery, there is a gradually increasing lumbar ache if temporary obstruction is produced. The intermittent hydronephrosis it produces has often, because of the variation in the size of the kidney, been mistaken for a movable kidney, the lower lobe becoming readily palpable when the pelvis is distended. The differentiation can here be made if a palpable point of tenderness is found in the line of the ureter, or if pressure from the palpably distended kidney gives rise to pain low down in the ureter. The character and direction of radiation of the pain is important. The pain is most acute over the seat of the lesion, it radiates upward to the kidney as well as downward through the genitocrural nerve. The psoas reflex is often present, while palpation reveals a thickened and tender ureter. This has been noted particularly in cases of infection and tubercular nephritis and ureteritis.

The differential symptoms are probably of most value in suggesting the probability of disease in the juxtavesical portion of the ureter, after calculus has been excluded. They will there lead to examinations by the cystoscope and ureteral bougies and catheters that will detect many obscure but curable lesions. The comparative symptomatology localizing the lesion in the juxtavesical portion of the ureter rather than in the kidney or upper ureter. The practical value of these localizing symptoms is illustrated in the following case:

History.—Mrs. A. H. W. (No. 320), was referred for a calculus diagnosis. The Roentgen examination excluded calculus. She had, however, suffered for some years with symptoms resembling cystitis, accompanied by severe pain. Repeated cystoscopic examinations and vesical treatments had failed to reveal a sufficient cause or to correct the pathologic condition. Her symptoms suggested calculus impacted in the juxtavesical portion of the ureter. As this lesion had been excluded a stricture or chronic ureteritis was suggested as possibly the cause of her symptoms. A localized area of granulations was found in the right juxtavesical ureter accompanied by a spasmodic stricture. All of her symptoms disappeared under treatment for this lesion.

Before discussing the advances in renal diagnosis that have resulted from developments in Roentgen technic and increased experience in translating the detail thus furnished, the present status of calculus diagnosis by the Roentgen method should be defined. The greatest value of this method is dependent on the ability to exclude, as well as to detect, calculi, since a technic capable of excluding implies an ability to detect all calculi present. Such a complete diagnosis often relieves the situation of all its gravity and renders efficient medical treatment safe and rational.

In August, 1898, I claimed equal accuracy for the exclusion and the positive diagnosis or detection of calculi. This claim was based on the axiom, "that where tissues of less density than the least dense calculus are shown in the Roentgenogram no calculus should escape detection." This did not claim infallibility for the diagnosis, but only equal accuracy. It permitted also the acknowledgment that in certain cases no definite exclusion diagnosis could be made. The development of technic up to the present time reduces that class of cases to a minimum, and the chief sources of error at the present are mistakes in interpretation and in basing a diagnosis on an imperfect negative.

Pure cystin, xanthin and indigo calculi are rare and have not been among those found, and hence no claim to exclude them has been made. Present technic might detect them, but they are so seldom seen that they have little bearing on the clinical accuracy of this method of diagnosis. The accuracy claimed for this method is based on a series of cases beginning in 1898, when technic was imperfect. The results in the last one hundred cases are even better so far as they have been reported.

The result in this, as in all other methods of physical diagnosis, are valuable in proportion to the technic and clinical experience of the diagnostician. The Roentgenogram must be taken and interpreted correctly to be of value. A valuable diagnosis is based on special technic and clinical experience. Unless a surgeon has acquired this special knowledge he is not only incapable of translating the diagnosis, but also is incapable of appreciating refinement in diagnosis in cases that are obvious to the expert Roentgenologist.

It should be clearly understood that it is a diagnosis and not a picture that is wanted, and that a diagnosis is not always obvious to an inexperienced observer, while a beautiful picture often represents no diagnostic value.

The essential qualities in a Roentgenogram on which a calculus diagnosis ought to be based seem imperfectly defined. Their attributes vary with the author. A beautiful picture that would clearly define the transverse processes of the vertebræ and show their structure would never detect phosphatic or carbonate calculi. These calculi would be penetrated and their shadow destroyed, and yet this is the standard advanced by some authors.

Recent developments in technic have rendered possible diagnoses of more delicacy than that of calculus and have advanced the standards demanded for accuracy in diagnosis. These characteristics are essential to an accurate exclusion diagnosis and need to be well defined. The Roentgenogram must take in the whole urinary tract, that is include the last dorsal vertebra and the symphysis pubis. This can be done usually with plate 12x20 inches in size and affords a comprehensive view with a comparison of the healthy and suspected kidney, and also demonstrates the presence of a second kidney.

A diagnosis of calculus should never be made on a single plate. The finding of a calculus or other lesion should be confirmed by a second plate, not necessarily as large, but including the suspected area. Both these Roentgenograms must possess detail in the shadows of tissues less dense than the least dense calculus, espe-

cially for an exclusion or negative diagnosis. The outline or partial outline of the kidney shadow, in the superimposed shadows of the surrounding soft tissues, should be visible and often the bladder, sometimes the ureters themselves. Such minutiæ in detail are now secured with increasing frequency, but can be expected only in favorable cases. The partial kidney shadow and that of the psoas muscle are sufficient for the exclusion of the more common calculi. In such an exclusion diagnosis, however, microscopic crystals or urinary sand is not included, but only calculi capable of obstructing the urinary flow.

The advances in technic have led to the production of more detailed shadows of the soft structures on which it has been possible to base valuable suggestions as to other diagnoses than calculus conditions involving the kidney. These are in addition to the valuable localization of calculi in one or other calyx or in the ureter. They have shown small collections of pus held in the pelvis of the kidney, besides the more evident and palpable forms of pyo- and hydronephrosis found in connection with calculus obstruction. Such detail confirms the calculous character of the shadows in the ureter and differentiates it from a phlebolith. There are, however, certain characteristics of ureteral calculi in their relation to the line of the ureter, the bladder, the bony anatomic points, etc., which to the eye of the expert Roentgenologist differentiate them from other foreign bodies in the tissues. The detail seen in soft structures is often absolute evidence of their relation to the urinary tract, but can only be appreciated by the expert observer. Various mechanical methods have been devised for rendering their relation to the urinary tract visible to the inexpert observer. The best among these is the ureteral catheter in which the walls are impregnated with bismuth, as suggested by Dr. Howard A. Kelly, but where they can be passed; the calculus must be very small and incapable of producing obstructive symptoms, or it would be detected by the catheter.

The status of the Roentgen method of diagnosis has been so firmly established that no renal diagnosis is complete or treatment rational where calculus is suspected without its employment by a competent and experienced Roentgenologist. As I have recently[1] said:

> It is essential to the integrity of the kidney to determine whether a calculus is present and has become quiescent or occlusive, or has passed into or out of the bladder without being detected. The symptoms subside in either case and yet, if the calculus remains quiescent it may form the locus about which irritation and infection take place; if it is occlusive, a hydronephrosis results and the functional life of the kidney is threatened, as the cessation of activity means final atrophy and degeneration. If, on the other hand, it is detected in the ureter the indications for treatment will depend on its size and the progress of the symptoms and signs, while if it is shown to have passed or to be absent from the urinary tract no treatment is required.

In addition to the perfecting of technic in calculus diagnosis, recent improvements and increased experience in reading have led to suggestions in diagnoses, other than calculus, that have an ever-increasing accuracy and value. As has been mentioned, in addition to showing hydro- and pyonephroses that are obvious on palpation, the increased detail has led to the detection of small purulent collections in the pelvis of the kidney. The value of negatives in which comparisons can be made between the normal and the suspected kidneys is here very evident.

In one of the earlier cases the shadow filling the pelvis and calices of the diseased kidney was in strong contrast to the normal. Its definition was not sharp enough for a calculus. The presence of a mild constant elevation of temperature, together with the history and other symptoms, suggested that this shadow was due to a collection of pus. Catheterization removed the purulent collection, subsequent irrigation resulting in complete recovery. In two other cases tubercular in origin the ureters were involved and the kidney so diseased that complete uretero-nephrectomy was performed.

Displaced and movable kidneys have been demonstrated, or the irregular outline of the shadow has suggested new growths, while in one case a cyst of the lower pole was clearly shown, all these tentative diagnoses being confirmed by the subsequent operations. The irregular and mottled character of the renal shadow has suggestd the multiple softenings of tubercular and surgical kidneys, while multiple minute calcifications have been shown in tubercular foci. In one patient operated on by Dr. Ramon Guiteras, a distinct but indefinitely defined shadow, in the line of the ureter, suggested an occlusion of the ureter with a collection of crystaline débris, as the shadow lacked the detail in definition characteristic of calculus. The diagnosis was confirmed by the operation, a uretero-nephrectomy.

Many other diagnoses of similar character have occurred in the work of other Roentgenologists. They are the result of expertness in technic and experience in the clinical interpretation of the detail secured. They are as yet only suggestion and lack the accuracy of valuable diagnoses, but they point to valuable developments that will come with increased experience.

The value of these suggestions will be felt more and more as their accuracy increases. This has been true of the calculus diagnosis, the increased accuracy in diagnosis has influenced the indications for treatment and has rendered rational courses of treatment that would otherwise have been dangerous. It has shown that many cases presenting marked symptoms of ureteral colic can be treated rationally and safely with the final passage and recovery of the calculus without operation. It has rendered such a course of expectant treatment rational by showing that the calculus is sufficiently small to be expelled by natural methods, and in addition that the majority of calculi are found in the ureter. Without the knowledge afforded by this method, expectant treatment is not only irrational, but also dangerous. In 31 of my cases in which calculi have been found in the ureter and expectant treatment has been suggested, the patient has passed the calculi. In only 11 cases of ureteral calculus has operation been considered advisable. Two patients passed ureteral calculi before the indications for expectant treatment had been determined. As the proportion of renal to ureteral calculi in my series of cases and the proportion of confirmed and unconfirmed diagnoses has been misstated by misquotation, I will give the following statement:

The total error in a series of 356 cases has been less than 3 per cent. In the last 100 cases only one case of error in diagnosis has been reported to me. In this case a calculus was found in the pelvis of the kidney as well as one diagnosed in the ureter. In this case the examination was made two years previous to the operation.

A positive diagnosis of calculus has been made in 106 cases. Of these, 36 were renal calculi; of them, 30 were

1. Ann. of Surg., April, 1907.

confirmed by the removal of the calculus, 4 of the patients refused operation, and in 2 no calculus was found. Seventy cases were of ureteral calculi; of them, 43 have been confirmed by the passage or removal of the calculus, in 27 the patients have not been operated on or heard from.

In 46 cases in which an exclusion or negative diagnosis was rendered, the patients were operated on and the diagnosis confirmed. In 7 cases where a negative diagnosis was rendered, operation showed a calculus to be present, while in 2 cases a mass of crystaline débris was found filling the pelvis of the kidney. This makes a total error of 10 cases in a series extending from the formation period of this diagnosis. As has been said, in the last 100 cases the proportion of errors is materially decreased.

There were 28 ureteral and 9 renal cases. In 2 renal cases the patients refused operation and in 7 the diagnosis was confirmed. In 19 ureteral cases the diagnosis has been confirmed by the recovery of the calculus. Of the remaining 9 cases, some of the patients are too recently examined and others have not been heard from. Of the 63 cases in which a negative diagnosis was rendered, 42 have been confirmed by the subsequent history or operation. In 21 cases the subsequent history has not been learned.

THE SURGICAL TREATMENT OF URETERAL CALCULUS IN THE FEMALE.*

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The treatment of ureteral calculus in the female differs essentially from that in the male, owing to anatomic considerations. In the male, the comparatively straight course of the ureter from the kidney down to the bladder, and its position on the pelvic wall, make access to it comparatively easy through an extraperitoneal incision. In the female, however, the broad ligament, placed, as it is, directly above the most dependent portion of the ureter, renders access to the deep pelvic portion of the ureter a matter of some difficulty. Stones in either sex, impacted at any portion of the ureter from the kidney to the superior strait, are easy to remove. Stones in the female, impacted at any point between the base of the broad ligament and the bladder, are accessible through the vagina in the majority of instances; but stones in the female lying between the superior strait and the base of the broad ligament are sometimes very difficult to remove.

The object of this paper is to enumerate the different operations which have been devised for the removal of ureteral calculi in the female and to point out the advantages and disadvantages of each one.

The question when to operate in a given case may be difficult to decide. A stone may remain impacted for a considerable length of time, and yet may pass on to the bladder and be voided through the urethra, without having caused any permanent change in the kidney. All calculi do not entirely block the stream of urine, and if a certain amount of urine can pass by, the stone may remain impacted for some time and may not occasion irreparable damage. Incomplete impactions, however, may give rise to a condition of hydronephrosis; complete blocking causes prompt atrophy of the kidney. It is, therefore, best not to wait too long before operating. The expectant treatment of stone in the ureter is very dangerous. Cabot[1] has shown that the ultimate mortality with expectant treatment is between 72 and 80 per cent.

A secondary complication of impacted stone is ulceration of the ureteral wall, periureteritis, and possibly abscess in the tissues around the ureter; should this occur, the surgical condition is thereby rendered far worse.

In a condition of uremia, should an operation be undertaken, no extended search for stones should ever be made. The most that should be done is to open the kidney on one or both sides, according to indications, and drain through the loin, reserving a radical operation for a later period.

Operations for stone may be classified as follows:

1. Transperitoneal route.
2. Transperitoneal (for diagnosis) and extraperitoneal routes combined.
3. Extraperitoneal route.
   - (a) Israel's incision.
   - (b) Witherspoon's incision.
4. Hypogastric route.
5. Urethrovesical route.
   - (a) Slitting the ureter.
   - (b) Injection of sterile oil into the ureter.
   - (c) Dilatation of the ureter.
6. Rectal route.
7. Sacral route.
   - (a) Kraske's incision.
   - (b) Pararectal incision.
8. Vaginal route.
   - (a) Vaginal incision.
   - (b) Combined extraperitoneal and vaginal incision.
   - (c) Crushing the stone in the ureter through the vagina.
   - (d) Doyen's incision.
   - (e) Garceau's incision.

1. *Transperitoneal Route.*—No one would willingly select this route from choice. Nevertheless the operation has been done by this method, and with success. Bovée,[2] while operating on a woman, 30 years of age, for an undetermined mass behind the right broad ligament, found on incision that it was a stone embedded in inflammatory tissue. The stone, measuring 2¾x1¾x1½ inches and weighing 1,310 grains, was successfully removed, the ureter closed, and an incision made through the posterior cul-de-sac into the vagina for drainage. The patient recovered, notwithstanding that urine had escaped when the ureter was incised. Besides Bovée's case, there are several others in the literature on the subject, and cures are reported in a few instances. The dangers of infection of the peritoneal cavity by septic urine, which is not uncommon in these cases, are so great that the route is to be absolutely condemned.

2. *Transperitoneal (for Diagnosis) and Extraperitoneal Routes Combined.*—In a few instances the abdomen has been opened, the stone located and pushed up into the kidney, whence it has been removed through a loin incision. This operation should be condemned because the whole ureter can be easily palpated through a moderately large extraperitoneal incision, and the same purpose accomplished. In cases of doubtful diagnosis the stone will in most cases be discovered by the means of diagnosis at our present command, so that such an incision will rarely, if ever, be called for.

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* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Fifty-eighth Annual Session, June, 1907.

1. Ann. of Surg., 1903, xxxviii, 506.
2. Wash. Med. Ann., 1905, iv, 233.

3. *Extraperitoneal Route.*—This operation was first deliberately performed by Bardenhauer,[3] who removed a high stone extraperitoneally from an adult female. Twynam[4] later performed the operation on a child 8 years of age. In Twynam's case an incision was made as for ligature of the common iliac artery, the peritoneum was pushed back, and a stone removed. The wound in the ureter was stitched and the patient got well. Israel[5] was the first to demonstrate that stones below the pelvic brim could be attacked extraperitoneally.

Any one who has done total ureterectomy in the female will agree that exposure of the ureter is easy down to the broad ligament, and even below it. If the operation is properly performed, the bowels are not seen at any time during the course of the operation, and the whole procedure is extraperitoneal. The chief objection to this operation is that the incision may have to be a fairly large one, especially in those cases in which there is doubt as to the exact location of the stone.

Israel's[6] incision is the best for exposing the ureter extraperitoneally. It begins at a point at the anterior edge of the sacrolumbar mass of muscles, a finger's breadth below the twelfth rib. The incision is brought forward parallel to the rib as far as the anterior axillary line; it then turns downward to a point two fingers' breadths from the anterior superior spine of the ilium, and from this point bends downward toward the median line so as to run parallel to Poupart's ligament as far as the outer border of the rectus muscle, in extreme cases beyond this point. It is not necessary to make the whole incision in every case, and, according as the stone is opposite the upper, middle or lower third of this line, so will the line of the incision be determined. The tissues are divided down to the peritoneum. With finger dissection, the peritoneum is carefully pushed back toward the middle of the body, carrying with it the ascending or descending colon and adjoining intestines. The ureter can sometimes be easily identified by reason of the stone, which presents as a hard mass. With small stones, however, this may sometimes be difficult.

It is well to remember that the ureter strips with the peritoneum. Cabot[7] has shown that there are a number of fibrous bands which connect the ureter and peritoneum. Cabot has also shown that the part of the peritoneum which becomes adherent to the spine is, within a slight range of variation, pretty constant, and that the ureter lies just outside the line of adhesion; when the point has been reached at which the peritoneum strips with some difficulty the ureter will usually be found a short distance outside of this location. Occasionally there is some inflammatory tissue around the ureter in the vicinity of the stone, and this may occasion some difficulty, especially in those cases of stone below the superior strait. When possible, particularly in those cases in which the stone is low down in the ureter, it is well to push it up with the finger and thumb, get it out of the pelvic cavity, and remove it at a higher level. An additional reason for doing this is that the ureteral wall at the seat of impaction is apt to be much thinned, and it may be difficult on this account to insert sutures.

Stones situated near the renal pelvis should, if possible, be pushed up into the kidney and extracted through an incision into the organ. Should the stone not be easily found, it is well to seek the kidney, follow the ureter down with thumb and finger, and locate the stone in this way. The incision into the ureter should be as small as possible, but not so small that the stone will lacerate it while it is coming through. After removal, the ureter must be catheterized both ways with a wax-tipped bougie in order to determine the presence or absence of other stones. Most surgeons prefer to suture the ureteral cut, using for this purpose fine catgut with a small needle. Care should be taken not to include the mucous membrane for fear of subsequent stone formation. Many operators do not suture the ureter, and abandon it with drainage. A permanent fistula rarely results in these cases. Leaving a stone in the ureter is attended with some risk. I have in mind a woman, 30 years of age, on whom I did nephrotomy; persistent vomiting followed this operation, from which the patient died eighteen days after operation. At the autopsy a small stone was found impacted in the ureter, which had undoubtedly caused the reflex vomiting. Urine had passed both ways, through the lumbar wound and through the bladder, after the operation. The opposite kidney had been treated for tuberculosis and was known to be inactive.

Stricture below the seat of impaction is a possible complication that should be dealt with. Young[8] records a most interesting case of this kind, in which a stricture near the vesical ending of the ureter was detected by filling the ureter with fluid and noting that it could not be milked into the bladder.

Some operators trust to their sutures holding and close the wound without drainage, but this seems an unnecessary risk. Others have thought it necessary to pass a catheter into the ureter through the bladder and allow it to remain there for several days. The catheter is not to be recommended unless there is an inflammatory reaction around the ureter. Albarran[9] was the first to use this method in a case of calculus impacted at the pelvic brim. An abscess and fistula followed impaction of the stone, and the pus was discharged through the loin. The calculus was removed by incision, but the ureter could not be sutured on account of the inflammatory tissue. A catheter was, therefore, passed into the ureter through the bladder, and was allowed to remain ten days. At the end of this time, no urine having come out through the iliac opening, the catheter was removed and the patient got well.

It is astonishing what a large incision may be made into the ureter and still be followed by healing. Thus Fiori[10] records a case in which the extraperitoneal operation was performed, and the ureter split for a distance of 16 cm., 12 cm. above the superior strait and 4 below. Eleven or twelve calculi were extracted, the largest of which weighed 5 grams. The ureter was reconstructed by sutures passed over a sound as a guide. A fistula followed, which closed in a few days, and the patient got well.

In exceptional instances it may be necessary to remove the entire ureter. Israel[11] has performed this operation three times. Complete disorganization of the kidney with marked pathologic changes in the ureter demand ureterectomy. In one of Israel's[12] cases a very large ure-

3. See Thelen, Central. für. Chir., 1882, ix, 186.
4. Brit. Med. Jour., 1890, i, 240.
5. Berl. klin. Wochschr., 1896, xxxiii, 844.
6. Chirurgische Klinik der Nierenkrankheiten, Berlin, 1901, p. 358.
7. Am. Jour. Med. Sci., 1892, ciii, 44.
8. Am. Medicine, 1902, iv, 216.
9. Ann. des Mal. des Org. G. U., 1894, xii, 845.
10. Policlinico, Rome, 1905, xii, Sez. Chir., 49.
11. Chirurgische Klinik der Nierenkrankheiten, Berlin, 1901, p. 362.
12. Loc. cit., p. 374.

teral stone, which measured 17 cm. long and 19 cm. in circumference, had so damaged the ureter as to make its removal imperative.

Witherspoon's[13] incision for removal of stones in the ureter applies to those cases in which the stone is definitely located near the bladder. An incision four inches long is made over the lower end of the rectus muscle, beginning at a point over its insertion into the pubic bone and extending upward in a direction parallel to its fibers. The rectus is divided through its muscular fibers and the peritoneum is reached. Dissection is then done with the fingers, pushing back the peritoneum from the ilio-pectineal line. The vas deferens is isolated and followed onward from the point of crossing the obturator vessels, and the ureter is found just behind it. Witherspoon asserts that three or four inches of the ureter can be located and operated on through this incision. The objection to it is that, if there be other stones higher up, the incision is a very unfavorable one because it can not be prolonged upward except at great disadvantage.

4. *Hypogastric Route.*—This method of operating is particularly applicable to males, and consists simply in making an opening into the bladder above the pubis and extracting the stone if it happens to be in that part of the ureter within the vesical walls. It will seldom be found necessary to perform this operation on the female. Nevertheless, Noble[14] did it in an adult female who had undergone the menopause; the vagina was so small in consequence of postclimacteric changes that the stone was inaccessible by the vaginal route. Noble did a suprapubic cystotomy and extracted the stone with ease by incising the ureter.

5. *Urethrovesical Route.*—With the advent of the Kelly cystoscope, which makes the bladder so accessible, many stones situated in that part of the ureter which traverses the bladder walls can be removed. The urethra is first dilated and a large-sized cystoscope passed. If the stone is immediately underneath the mucous membrane of the ureteral eminence, it may be possible to remove it by forceps or hook or by slitting the ureter with a pair of bladder scissors. Kelly[15] advises passing a finger in the vagina behind the stone, pushing it forward, passing a hook into the ureter behind the stone and pulling it forward.

Injection of sterile oil through a ureteral catheter passed up behind the stone has been recommended by Schmidt.[16] He reports a successful case by using this method.

Stones situated at some distance from the vesical entrance of the ureter may sometimes be treated by dilatation of the ureteral opening. Crawford[17] dilated the lower end of the ureter with his finger, the dilatation taking an hour, and removed a stone 1⅜ inches in diameter, impacted in the vesical wall of the ureter. Kelly[18] cocainized the ureter through the vagina in a female 38 years old. After cocainizing the bladder and ureter as well, he passed dilators on the affected side, dilated a stricture which was present, passed a wax-tipped bougie and detected stone; nineteen hours later a small calculus was passed, with complete relief to the patient. This was the first time that a stone has been released in this way. Kelly recommends the procedure in subacute cases only.

6. *Rectal Route.*—A stone has been removed through the rectum once only. This was Ceci's[19] case, in which the stone had almost ulcerated into the rectum. A slight incision released the calculus, but the patient died, as the opposite kidney was likewise affected. The method is applicable only in similar cases, namely, when there has been periureteritis, with subsequent abscess formation and softening of the rectal wall.

7. *Sacral Route.*—When Cabot[20] first mentioned the feasibility of the Kraske incision for removal of stones well back in the ureter near the pelvic brim, it seemed that there was much to recommend this method, but since the advent of the extraperitoneal route this method is no longer though of. Cabot advised a long incision, as for the Kraske operation, removal of the coccyx and lower part of the sacrum on the affected side, with division of the sacroiliac ligament. He stated that it was difficult to find the ureter, and that the peritoneum in this situation was extremely thin and was in danger of being wounded. Ferria[21] did the operation and removed a stone successfully. Cabot[22] also did the operation, but he found that there was a great deal of hemorrhage from the hemorrhoidal vessels which was very difficult to control. He concluded in his article that the iliac incision was much to be preferred. Morris[23] has twice removed stones in the female by employing a straight incision parallel with the median line, an inch from it, and five inches in length, beginning two inches above the border of the gluteus maximus muscle and extending nearly to the transverse level of the anal aperture. The field was exposed by dividing the great sacrosciatic ligament, and the stone removed. Morris called this a pararectal incision.

8. *Vaginal Route.*—Many stones are found in front of the broad ligament, between it and the termination of the ureter. Operation for their removal through the vagina is a comparatively simple matter. The field is exposed with a retractor and a cut is made directly over the ureter where the calculus is impacted. The ureter is seized with blunt hooks, and an incision is made large enough to push the stone through without tearing. Care should be taken not to allow the stone to slip back in the ureter above the site of impaction; this portion of the canal is dilated in consequence of urinary pressure, and the stone may easily slip back and escape above. A finger in the vagina behind the stone will guard against this, and, if there should be difficulty about extracting the stone, a small blunt hook may be slipped past it and the calculus hooked out. A catheter is run up to the kidney to make sure that there are no further stones, and it is also well to catheterize the ureter through the bladder to make sure that there is no stricture. The ureteral wound is sewed, if possible, with fine catgut, and if there is no infection the vaginal wall may be closed over it; otherwise it is best to drain. If it is impossible to sew the edges of the incision in the ureter it will have to be left alone. Some operators have advised passing a catheter through the bladder into the ureter up beyond the incised portion and allowing it to remain for a time. This does not seem necessary if the urine is not infected and the incision is a clean one; if, however, there is periureteritis with dense inflammatory tissue around the ureter it may be well to pass the catheter as first advised

13. N. Y. Med. Jour., 1904, lxxix, 973.
14. Am. Med., 1902, iv, 501.
15. Operative Gynecology, 2d ed., 1906, p. 541.
16. THE JOURNAL A. M. A., 1904, xlii, 708.
17. Am. Med., 1904, viii, 972.
18. THE JOURNAL A. M. A., 1900, xxxiv, 516.
19. La Riforma Medica, Sept. 5, 1867, p. 1214.
20. Trans. Med. Soc. State of New York, 1892, p. 102.
21. Ann. des Mal. des Org. G. U., 1894, xii, 652.
22. Boston Med. and Surg. Jour., 1905, lii, 655.
23. Surg. Dis. Kidney and Ureter, London, 1901, ii, 526.

by Albarran,[24] and later by Kelly.[25] If preferred, a stylet may first be run up into the ureter, over which a catheter tube is slipped; the open hole at the kidney end collects the urine better than a catheter with a hole in its side.

Kelly,[26] operating extraperitoneally on an adult female, with stone impacted just behind the broad ligament, was unable to safely remove it owing to dense adhesions. He, therefore, displaced it by thrusting it forward until it could be felt through the vault of the vagina. A small incision in the vaginal vault safely removed it.

If the stone is soft and can be easily crushed with the fingers, this may be tried, though without much hope of success. If it crushes easily it may pass *per vias naturales*. Young[27] refers to some of Rovsing's cases in which this method was used.

Stones impacted near the ureteral orifice in the bladder which can not be removed by incision of the ureter through a cystoscope may be approached, as shown by Kelly,[28] through a vesicovaginal incision. The patient is placed in the knee-chest position, the bladder distended with air, a rapid cut made through the septum, which exposes the field, and the stone is easily picked out of its bed.

Doyen's[29] operation consists in incising the anterior cul-de-sac of the vagina, using the same incision as for vaginal hysterectomy. The bladder is dissected away from the uterus as high up as the vesico-uterine cul-de-sac, using gauze sponge and finger dissection. If a catheter has previously been passed into the ureter, there will be no difficulty in identifying it and no danger of injuring it during the operation. The stone is extracted and the ureter immediately sutured. If fistula follows, operation for cure will be much more difficult than if the vaginal route had been selected. The method is not applicable for stones behind the broad ligament, on account of the difficulty of dissecting beneath the ligament, as well as on account of the great danger of wounding the uterine artery which lies in this vicinity. The distance between the cervix and the pelvic wall at the level of the cervix is very short, being only 4 cm., a rather narrow space for delicate operations on the ureter. It would seem that the operation must have a narrow application because stones in front of the broad ligament are best treated by simple vaginal incision.

Garceau's Incision.—I devised this operation a few years ago in an urgent case in which there was necessity for a rapid operation. At the time this operation was performed I did not know of Doyen's method. The patient,[30] 34 years of age, had been suffering excruciating agony for a whole week in an endeavor to pass a stone impacted in the left ureter. The stone was felt on vaginal examination at a point 3 cm. posterior to the transverse midline of the cervix and well behind the broad ligament. The patient's condition was serious, and a long operation was out of the question. She had just been delivered of a child, and an extensive operation involving considerable loss of blood, which seemed not unlikely to happen in view of the congested condition of the parts, was out of the question. A vaginal incision seemed impracticable in view of the distance of the stone from the vaginal outlet. It occurred to me that if the stone could be pushed down toward the vagina and kept there while the vagina was being incised the cut would be a small one and the stone would serve as a guide on which to make the cut. An endeavor to accomplish this was made by pressing down through the abdominal walls, but this was not satisfactory; the stone slipped. The thought then occurred to me to incise the anterior cul-de-sac, push back the peritoneum between the bladder and uterus as far as the broad ligament, then evert the broad ligament backward with the tip of the finger, catch the stone with the tip of the finger, crooked at the last joint, force it down toward the vaginal outlet, cut on it with a very small incision, and squeeze it out. If hemorrhage occurred, it could be easily controlled by pressure from above with the finger, and sutures could be passed without trouble. Hemorrhage from the anterior cul-de-sac was not feared, as it could be easily controlled.

The operation was performed as planned, without the least difficulty. The anterior cul-de-sac was quickly opened, the peritoneum pushed back and the broad ligament everted. The stone was plainly felt, was pushed down toward the vaginal vault and delivered through a vaginal incision 1½ cm. long and a ureteral incision a little shorter. It was like squeezing a cherry stone out of a ripe cherry. Immediately on delivery the vaginal incision was closed with silver wire sutures. Some hemorrhage occurred in the anterior cul-de-sac, and as it was not desired to take any more time, a few clamps were left on the vessels. The whole operation took ten minutes and the stone was delivered in five minutes. The convalescence was not remarkable and there was no fistula. Subsequent catheterization showed both ureters to be free. The stone in the dry state weighed 7 decigrams, was 1 cm. long and nearly 1 cm. wide.

The finger behind the stone prevents it from slipping back into the dilated ureter above when the ureter is incised. To avoid wounding the ureter while the cul-de-sac is being incised it is best to pass a catheter into it, tying it in by adhesive plaster strips so that it will not slip out. This should be done before the operation begins. When the stone is removed absence or presence of a stricture can be determined with ease by this catheter, which may likewise be run up into the kidney in search for other stones. It is not necessary to endeavor to find the walls of the ureter in order to sew them. The incision being so small when closed acts as a splint which holds the cut ureter together. Should leakage occur the urine will easily find its way into the vagina. If the urine is infected, however, it is best to leave the incision open.

The chief advantages of this method over the abdominal extraperitoneal are the extreme rapidity with which the operation can be performed and also the comparatively slight trauma. Patients suffering with impacted ureteral calculus may be desperately ill, and time is an element sometimes not sufficiently considered. There should be less danger from fistula with this operation than with Doyen's, because the healing of the vaginal incision tends toward closure. A fistula in the vagina is a less serious matter than one in the anterior cul-de-sac, with reference to subsequent operation for closure. Hemorrhage is always under perfect control. Comparatively high stones can be operated on by this method because the finger reaches behind the broad ligament and pulls the stone forward. Certainly stones impacted at the paraischial bend of the ureter can be reached, for this was

24. Ann. des Mal. des Org. . U.,G 1894, xii, 845.
25. Schenk: THE JOURNAL A. M. A., 1901, xxxvi, 1303.
26. Am. Jour. of Obstetrics, 1902, xlvi, 67.
27. Am. Medicine, 1902, iv, 215.
28. THE JOURNAL A. M. A., 1902, xxxix, 291.
29. Morris: Surg. Dis. Kidney and Ureter, London, 1901, ii, 530.
30. Boston Med. and Surg. Jour., 1904, cl, 426.

the position of the stone in the case reported. Unless, however, the vagina is a roomy one considerable difficulty may be experienced. It is distinctly not applicable in patients in whom natural atrophy either has taken place or is taking place, for in these patients the vagina is narrow, there is little room for pelvic manipulation, and there is great danger from hemorrhage. In these cases the extraperitoneal abdominal operation must be done. The following case will illustrate this:

The patient was a nulliparous female, 38 years old, with beginning genital atrophy, and she had a stone impacted in the right ureter about 7 or 8 cm. from the vesical end. The stone was found on vaginal examination, and it could be just reached with the tip of the finger. An incision was made in the anterior cul-de-sac, and the bladder and peritoneum were dissected away from the uterus. The finger passed along this cavity could just reach the stone. An attempt was made to press the stone toward the vagina, but it was found impossible to do so, owing to the shortness of the vagina. After the greatest difficulty enough space was made by dissecting through the base of the broad ligament, so that with the aid of a pair of forceps grasping the lower end of the ureter the stone could be pulled down far enough to be cut on and extracted. A few hours after the operation there was a severe secondary hemorrhage. The patient had to be put on the table again, have ether administered, and have the broad ligament clamped. The stone was a very large one, irregular in shape, measured 2 cm. in length, and 1½ cm. in width. It had given little trouble.

This patient had never borne children, and she had an unusually small, narrow vagina which had undergone some atrophy. She recovered well from the operation, and the wound in the ureter, which was not sutured, it being altogether too high up, closed, and no fistula resulted.

The case illustrates very well the limitations of the Doyen operation: the broad ligament is apt to be seriously lacerated; hemorrhage is likely, and the ureter can not be sutured if the wound is too far up.

The choice of routes for the removal of stone below the pelvic brim will depend on the nature of the case. A stone in front of the broad ligament can be removed by vaginal incision or by some operation performed through the Kelly cystoscope. It will be rarely necessary to open the anterior cul-de-sac for any stone situated in front of the broad ligament. Stones situated between the pelvic brim and the base of the broad ligament are more difficult to remove than stones in any other part of the urinary tract. In the female, stones are very apt to become impacted in this situation, being arrested at a sharp turn in the ureter, called by Young[31] the para-ischial bend, because it is opposite the spine of the ischium. In both my cases this was the seat of impaction. It has been plainly shown that an extraperitoneal incision will reach stones situated in this portion of the ureter. This operation, however, necessitates a long incision through the abdominal wall, and it is not always successful in cases in which there are dense adhesions. In such cases Kelly's method of pushing on the stone toward the vagina through an extraperitoneal incision in the iliac region may make it accessible through the vaginal vault. But cases in which this can be done must be rare. A stone situated directly under the broad ligament and a little behind it may be reached in roomy vaginas by the operation I devised. The sacral route involves a mutilating operation and has become obsolete. The rectal route will seldom find favor, and then only in those cases in which the stone has practically ulcerated through.

Stones situated above the pelvic brim must be attacked through an extraperitoneal incision, and most surgeons will prefer to follow Deaver's[32] rule in these cases, which is to explore the kidney first through a loin incision, pass a ureteral sound down the ureter, locate the stone and enlarge the incision according to need.

DISCUSSION

ON PAPERS OF DRS. LEONARD AND GARCEAU.

DR. G. L. HUNNER, Baltimore, Md., emphasized the importance of the differentiation of the locality of the stone by careful examination. He thought that too often we are satisfied with the mere fact that the patient has signs or symptoms of stone, and go ahead with the operation, without proper differentiation. He agreed with Dr. Leonard that all methods of precision should be made use of in the diagnosis of stone. He is never satisfied with the Roentgen ray method alone, nor with the waxed catheter method of diagnosis, but uses both in every case. The Roentgen ray sometimes misses large stones when they are encysted in a kidney of fibrous degeneration. It misses small stones when they are very minute and encased in fibrous tissue in the lower end of the ureter. Unfortunately, too, the Roentgen ray finds stones in the ureteral tract when they are not present; in other words, it takes pictures of phleboliths of the broad ligament and of calcareous deposits in the ovary. In such cases the use of the waxed catheter is most valuable. In connection with Dr. Garceau's paper, Dr. Hunner mentioned Israel's incision which starts just below the rib and extends forward and downward into the groin. He thought that Dr. Kelly was the first to make two incisions out of the one long incision still unnecessarily used, leaving the broad bridge of muscle between. The usual lumbar incision made for the kidney and extended farther forward enables one to examine the ureter to the pelvic brim; and then turning the patient partially to the back, the Bardenhauer extraperitoneal incision is made in front. Dr. Hunner finds it advantageous to make the gridiron incision an inch and a half from Poupart's ligament. From this lower incision, even with the gridiron method, a perfectly satisfactory examination can be made and the operation done in any part from the pelvic brim to the bladder. Dr. Garceau, he said, is to be congratulated on his five-minute operation if those stones are up in the ureter, but he did not believe he will be as fortunate in the majority of his cases. The stripping back of the broad ligament from the incision, just as Dr. Garceau describes, is a simple matter if the stone has not been there a good many years and has not attached the ureter to the broad ligament by dense adhesions.

DR. PERCY BROWN, Boston, Mass., emphasized the importance of a proper preparation of the patient, what might be called the ante-operative preparation of the patient in cases where the Roentgen ray method of diagnosis is to be pursued. That preparation, he said, can not be too thorough. Examinations of the ureteral tract can not be made on the spur of the moment. Preparations should be made twenty-four hours beforehand. The patient should be instructed to take cathartics, and the lower bowel should be thoroughly cleaned out, if possible. In this way the task set for the Roentgenologist will be rendered very much simpler, and the results will be very much more valuable. If this method be followed, the question of previous urinary findings in the sediment may be put to one side. The question of whether the stone is of pure uric acid constituency can be ruled out in this way; partly because there is a better field to operate in, and because of the fact that the pure uric acid stone is seldom found in the adult. If it is found in the child, the proposition is an easy one on account of the relative thickness of the child's abdominal wall. When phleboliths appear in one of the venous plexuses of the pelvis, they should be considered very seriously. An experienced observer will, however, be on his guard at a glance.

DR. BRANSFORD LEWIS, St. Louis, Mo., was glad to see that Dr. Leonard, while claiming for the Roentgen ray the tremendous advantages it has given, allows room for mistakes that the ray may make, even in master hands. The interpreta-

31. Am. Medicine, 1902, iv, 213.

32. Surgery, Gynecology and Obstetrics, 1906, ii, 270.

tion of Roentgen ray plates, he said, is, of course, a very large feature in the work, and mistakes will arise. They may come, not only from the machine or operator, but also from anatomic deviations and pathologic sources. This was well illustrated in a case recently observed in the practice of a friend, Dr. Seelig, of St. Louis. There was shown a spherical body in the line of the right ureter in a female. Although catheterization was attempted, it was not carried out successfully. A diagnosis of ureteral calculus was made. Israel's incision was made and the ureter exposed, but no calculus was found in it, although the ureter was exposed for several inches. Dr. Seelig finally detected a little body that proved to be a concretion in the end of the appendix. He made an incision through the peritoneum, took out the appendix with the concretion, which had been taken to be a ureteral calculus. The Roentgen ray and ureteral catheterization, Dr. Lewis said, should be used together, not one to the exclusion of the other. If it is necessary to remove calculi by cutting operations, he thought Dr. Garceau's method an admirable one, but, he asked, what is the use of making an incision and subjecting the patient to two or three weeks' invalidism if the ureteral calculus can be removed without any cutting at all? Manipulation through the cystoscope does not reach all cases, but many stones in the lower end of the ureter may be removed by means of the operative cystoscopic outfit, which Dr. Lewis has been using with gratifying success for several years on operative work. By this means he has removed several ureteral calculi that would otherwise have required cutting operations.

DR. CHARLES P. NOBLE, Philadelphia, Pa., agrees with those who say to use both the Roentgen ray and the ureteral catheter. He considered Dr. Garceau's use of Deaver's suggestion to do an exploratory nephrotomy in order to look for the stone which is in the urethra like going back to the dark ages. The stone should be located with the Roentgen ray or catheter and exploratory and unnecessary nephrotomy avoided. Dr. Noble agreed with Dr. Hunner that it is an advance in surgery not to make an incision from the spinal column to the pubes, but to divide the operation into two incisions. He advises making the lower incision through the rectus muscle. The operation as done by Dr. Hunner has the disadvantage that if one wants more room, he can not get it without cutting through the transverse muscles.

DR. L. G. COLE, New York City, after making about 1,500 radiographs for the diagnosis of renal calculus and a number of experiments with various kinds of calculi, felt justified in saying that any stone of sufficient size to justify an operation may be shown by a radiograph when the following detail is present: The spine; the transverse processes of the vertebræ all the way to their tips; the outer border of the psoas muscle and the outline of the kidney. This detail may be obtained in about 95 per cent. of the cases. A person having enough experience in reading radiographs to differentiate the shadows of renal calculi from flaws in the plates and other things which cause shadows similar to calculi, may make an absolutely positive or negative diagnosis of renal calculus.

DR. CHARLES L. LEONARD, Philadelphia, has seen many of the best operators operate for the stones that he found. The operations have usually been by different methods than those described; that is, it is very seldom that he found a stone in the parasacral portion of the ureter. Dr. Lewis, he said, asked what is the use of operating for stone in the ureter when one can get it through the urethra by dilating? Dr. Leonard asks, What is the use in operating at all, if the patient will pass the stone by Nature's methods. He has had 31 cases of ureteral stone in which he said the stones were small enough to pass, and all of these patients have passed the calculi. The wax-tipped bougie he considers one of the most accurate methods for detecting ureteral stone, but the Roentgen ray is better than the wax-tipped bougie. Is a case in which Dr. H. A. Kelly examined a patient he found a stone on one side, but on passing the waxed bougie he found none on the other. He asked Dr. Leonard to make a Roentgen ray picture, and a stone was found in the left kidney as well as the one in the right ureter which Dr. Kelly had found. Dr. Leonard agreed with Dr. Cole that the matter of finding phleboliths and calculi is a question of accurate interpretation. The finding of one phlebolith is very difficult. Multiple ones can readily be seen as to their position. In one case Dr. Kelly detected a single phlebolith in the left vaginal wall.

DR. E. GARCEAU, Boston, Mass., agreed with Dr. Lewis that many stones can be removed through the bladder. This is particularly so, he said, in the case of the female, for with the Kelly cystoscope the field is practically before us, and the ureter can be dilated with the greatest ease. This method should be tried if there is time. Naturally, it is not applicable in very acute cases The ureter is capable of very great dilatation.

Regarding Deaver's method, Dr. Garceau said he did not mean to give the impression that Deaver's method is the best one, but merely mentioned it to illustrate the point which Deaver made, that there might be stones in the kidney. In these cases the Roentgen ray is of great help in diagnosis before operation.

THE EARLY DIAGNOSIS OF TUBAL PREGNANCY.*

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Twenty-nine out of every thirty cases of ectopic gestation present symptoms by which a presumptive, if not a reasonably certain, diagnosis may be made prior to the patient's arrival at a condition which is alarming.

There are instances in which the first complaint and the first symptoms are of such a nature as to excite the greatest alarm in the minds of physician and friends, because the patient is, without previous warning, brought at once to the verge of death, yet such cases are very exceptional.

To simplify the detection of ectopic gestation and to aid in an early diagnosis of the condition, I wish first to direct your attention to what I consider two distinct stages of the disease: the non-tragic stage and the tragic stage.

THE NON-TRAGIC STAGE.

Since most cases present a group of symptoms preceding the tragic stage of the disease sufficiently distinctive to warrant a diagnosis, and since these symptoms are in no way alarming, I refer to them in this paper as the non-tragic symptoms of ectopic gestation.

In order better to illustrate the importance and value of such a division in the symptomatology of this affection, I wish to make the following assertions, based mainly on a study of more than one hundred and thirty patients operated on, and a few additional ones who died without operation and in whom diagnosis was confirmed at autopsy:

(a) More than 90 per cent. of the 130 patients consulted a physician on account of symptoms referable to the pelvis before the tragic stage was reached.

(b) Many of them received medical advice or attendance for a term of several weeks before tragic symptoms presented. Many of this 90 per cent. of all patients only consulted a physician once before the occurrence of tragic symptoms.

(c) In consequence of failure of the physician consulted to attach proper value to the symptoms, many such patients were wrongly assured, and, although the patients continued to exemplify the symptoms of the non-tragic stage of ectopic gestation, they relied for days or weeks on false hopes until the tragic symptoms occurred.

(d) Of the 90 per cent. of all patients who consulted a physician a very large proportion were told that an (ordinary) abortion was threatened, was occurring, or had occurred.

(e) Of the 90 per cent. of all patients who consulted a

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physician, about 20 per cent. were subjected to the operation of curettement for the cure of the metrorrhagia, the real cause of the metrorrhagia not having been suspected.

(f) Of the 90 per cent. of all patients who consulted a physician, some were unable to pursue their usual vocation, being confined to the bed or couch for days or even weeks before tragic symptoms occurred. Except for brief intervals as an hour, or a few hours or so, in a large proportion of the cases of ectopic gestation, the patients pursued their usual vocation during the non-tragic stage without material or prolonged interruptions.

(g) Only about 20 per cent. of the physicians consulted in the non-tragic stage arrived at a correct presumptive diagnosis. Far more often it happened that I was called to aid the physician because of the pains and metrorrhagia, the real nature of the condition being not even suspected by him.

(h) In three instances only, out of more than 130 cases, did it happen that I was the first physician consulted by the patient.

(i) Ninety-nine per cent. of all patients properly operated on in the non-tragic stage of the disease should promptly and completely recover.

(j) It is easy to arrive at a presumptive diagnosis of ectopic gestation.

If these assertions are correct the burden of responsibility is primarily on the obstetrician and the general practitioner. If they require an exhibition of the tragic symptoms of the disease to afford them the first presumption of the actual condition present, may they not be charged with the demise of such as die in consequence of their failure to diagnosticate the condition?

Still I would not place on the internist the full responsibility of the diagnosis, but, in view of the large mortality occurring from inaccurate or delayed diagnoses, and the fact that nearly all patients would recover if operated on soon after they first consult the general practitioner, I would impress on him the importance of acquiring a method whereby he may generally arrive at a presumptive diagnosis when a case is in hand.

Physicians for whom I work have often asked me to tell them how to diagnosticate ectopic gestation. I have generally first said to them:

> When any woman after puberty and before the menopause, who has menstruated regularly and painlessly, goes 4, 5, 6, 8, 10, 15 or 18 days over the time at which menstruation is due, sees blood from the vagina differing in quality, color, quantity or continuance from her usual menstrual flow, and has pains, generally severe in one side of the pelvis or the other or possibly in the hypogastric region, ectopic gestation may be presumed.

The two items of greatest value in arriving at a presumptive diagnosis of ectopic gestation in the non-tragic stage of the disease are: (a) Atypical menstruation or metrorrhagia; (b) pains.

Menstruation.—The expression "atypical menstruation of ectopic gestation," although a misnomer, is a useful one, for the reason that it directs attention to the appearance of blood generally out of rhythm with the normal menstrual cycle of the individual. The amount of blood lost may be very much greater or very much less than the usual menstrual flow of the patient. It may be continuous or appear with interruptions. It may be darker or may be lighter or more brownish than the usual menstruation.

The metrorrhagic blood of ectopic gestation very often has a sort of slippery character which I am unable to describe but which I have perceived so often that I at times have imagined that I could almost diagnosticate ectopic gestation by the effect of such discharge on the tactile sense of my fingers. Thus in one or more, or several ways, the blood which escapes from the vagina in ectopic gestation departs from the usual menstruation of the individual. The woman of moderately good perception and memory will describe wherein the atypical menstruation of her ectopic gestation differs from her usual menstruation.

As an aid in diagnosis careful history-taking is of the greatest importance. None of the items in the following schedule should be omitted when obtaining the patient's history:

1. If the patient's present or last menstruation was out of type, write the date of its beginning, its continuity, its interruptions; determine and note the quality, the quantity and the character of bleeding.

2. Note the date, duration, amount and character of the menstruation preceding the atypical menstruation.

3. Note the date, duration, amount and character of the second last menstruation preceding the atypical menstruation.

4. Note the date, duration, amount and character of the third last menstruation preceding the atypical menstruation.

5. Note the date of each colic, or series of colics, and the date or dates of any recurrences.

If the patient has been accustomed to painful menstruation, analyze the character of her dysmenorrhea and ask her particularly if the pains which appeared in connection with the blood at this time were the same as the usual pains of her dysmenorrhea. If you have in hand a case of tubal gestation and the patient is intelligent she will at once say that she never had pains like these, and she will at once tell you wherein the pains and the flow of her present attack differ from her previous and painful menstruations. Morning sickness and enlargement of the breasts, which are the ordinary symptoms of intrauterine pregnancy, do not belong to the symptomatology of the extrauterine pregnancy. If you are the second physician in the case, and the first one is reported to have said that the woman had a miscarriage and is still bleeding and has pains, be slow to accept such statement, unless a fetus has been seen by some one. If it has been seen by anyone, inquire particularly as to who saw it, and obtain if possible from that person a description of what he or she saw. I never allow the statement that "the patient has aborted" to be entered in my history and other note-books by those who work under my direction, without entering it as a quotation, except in instances where a fetus has been seen. In that case the name of the doctor or friend who saw the fetus is written in the note-book, together with a description of the fetus.

Pain.—If the colics are very severe with steady pain between them, the abdominal walls may be rigid. The colics in the beginning of tubal pregnancy are often mistaken for intestinal pains. They may not cause the patient to rest more than momentarily from her work or pleasure. In other cases the pains are so severe and agonizing that the doctor is at once sent for, whatever the time of day or night. Soreness of the abdomen may pass off in an hour or less after a severe ectopic gestation colic, or it may be so prolonged as to prevent the patient from walking for a day or two or longer. Occasionally jars of the body in walking, or being much on the feet, cause so much pain that the patient remains in bed for a while. In such cases the colics may return after shorter or longer intervals.

Sometimes colics and the atypical menstruation of ectopic gestation appear before the menstruation is due[1] or just at the time that it is due. Such a history is rather unusual, and in the absence of tragic symptoms such as a rapid and weak pulse, fainting, and pallor of the skin, may offer very little presumption of the true condition present until we have waited for a sufficient time to find whether the menstruation is out of the usual type for that individual.

Colics or the sharp pains of ectopic gestation are generally closely attended by the appearance of a bloody discharge from the vagina.

Pulse.—In the non-tragic stage of ectopic gestation the pulse usually remains about normal. If, however, within a few hours a sufficient quantity of blood is lost in the abdomen the pulse will be found quickened, the patient weakened and the temperature below normal, and the amount of blood thus lost to the circulation may be sufficient to at once cause alarm or imperil life. If so, the tragic stage has been reached.

Temperature.—The temperature of the patient in the non-tragic stage of the disease, like the pulse, is not materially affected, except a considerable amount of blood has escaped into the peritoneal cavity. In that event there sometimes occurs, a few days after extensive bleeding in the peritoneal cavity, some elevation in temperature, generally not more than a degree or so. It should be said that the symptoms of the non-tragic stage may present for days or weeks before any considerable amount of blood is found in the abdominal cavity. During all this time the temperature may not be materially altered from normal.

Respiration.—Respiration is not materially affected in the course of the non-tragic stage except in connection with elevation of temperature.

THE TRAGIC STAGE.

The tragic stage of the disease is exemplified by severe colics, pallor of the skin, weak and rapid pulse, a fall of temperature one, two or three degrees below normal, rapid breathing, fainting, generally vomiting and restlessness, and sometimes a lethargic condition from which the patient may be aroused, In this tragic stage the pulse may be anywhere from 120 to 180. It may not be possible to count it at the wrist, although its flickerings may be perceived until shortly before death.

Physical Examination.—No disease produces in the pelvis such a variety of conditions to be palpated and mensurated by examining fingers and hands as does ectopic gestation. Ectopic gestation always increases, in a slight degree at least, the size of the uterus, but I consider it exceptional for the womb to become very much enlarged, unless, as will happen in exceptional cases, a very considerable decidua forms within it. The cervix is generally not altered by tubal pregnancy, but this rule has some exceptions. It is sometimes a good deal softened. Most uteri of the ectopic gestation are not very materially altered in size, shape or consistency from the non-pregnant condition. Unless hematocele has formed the mobility of the uterus may not be particularly affected. If the uterus is lifted on the examining finger pain is almost always produced on the side of the pregnant tube.

In the non-tragic stage the pregnant tube is usually sufficiently large to be palpated, and possibly also approximately measured with bimanual palpation. I have seen cases of tubal pregnancy wherein diagnoses were made, and the patients operated on in the non-tragic stage of the disease and where the tube at its largest diameter did not exceed one-half of an inch. It is not impossible for the tube to so enlarge from the growth of the fetus within it, and from hemorrhage between the fetal membranes and the tube wall, as to increase its diameter to a size of two inches or more. In a few days I have known the tube to become distended from hemorrhage within it to this extent before any considerable amount of blood had reached the peritoneal cavity, and the patient had consequently not yet exemplified the symptoms which characterize the tragic stage of the disease.

Incidentally I might here mention that it is not likely that the simple growth of a fetus within the tube causes pain. Whenever pain is experienced it is probable that a little hemorrhage has occurred within the tube, and that the pain is caused by the sudden distension of its lumen. A pregnant tube is always tender when squeezed and may be extremely painful when so treated. The tube may be imbedded in blood clots, or so displaced, or partly or completely engulfed in hematocele, that its form and size are indistinguishable.

I do not believe that I have ever chanced to examine bimanually a pregnant tube before any of the symptoms of the non-tragic stage have manifested themselves.

If a large hematocele has formed the uterus may be carried far upward and almost out of the pelvis. When thus lifted it is generally pushed to the opposite side from that in which the tubal pregnancy exists. The hematocele may be so large and the uterus so far pushed up that the cervix will with difficulty be reached by the index finger per vaginam.

The corpus and fundus uteri resting on the outer and anterior surface of a large hematocele may be distinctly palpated through the abdominal wall. In one instance the uterus was visible as it rested on a large hematocele and lifted the abdominal wall.

Hematocele.—A hematocele is sometimes very hard, at other times soft and boggy; generally the latter. When hematocele forms and materially displaces the uterus, frequent, difficult or painful urination may be complained of. The formation of hematocele generally marks the presence of alarming symptoms and, consequently, the tragic stage.

The following are some of the conditions from which tubal pregnancy must be differentiated:

(a) Abortion.
(b) Salpingitis.
(c) Uterine polypus, papilloma uteri and submucous and interstitial fibroid of the uterus.
(d) Cancer of the uterus.
(e) Ovarian cyst with twisted pedicle.
(f) Progressive intrauterine pregnancy accompanied with metrorrhagia.

(a) The internist is so generally familiar with abortion in its various phases that I will not occupy time in describing any of its characteristics.

(b) A quite common result of salpingitis is shortening of the intermenstrual term, and a lengthening of the menstrual flow with increase in the quantity of blood lost at menstruation.

It is not at all unusual for a patient with acute salpingitis to have a lengthened term of menstruation and to have it followed for a number of days with a metrorrhagia. If by the time we first see such a case the initial fever of her infection has passed away, and we then find her temperature normal, we may wrongly conclude that

1. In case No. 4 the atypical menstruation began twelve days before menstruation was due.

her symptoms are those of the non-tragic stage of tubal pregnancy. If the salpingitis has existed for months or years we will generally find that the patient has often suffered from pelvic pains, and that she has sought relief from physicians, and such a history will, of course, place us on our guard. Furthermore, this may not only be evidence of a pre-existing, or more or less chronic salpingitis, but also the added symptoms of ectopic gestation.

The patient with chronic salpingitis rarely goes over her time of menstruation. If there is any change in the length of time from beginning to beginning of menstruation it is more likely to be shortened, while the duration and amount of the flow is often increased.

The woman with tubal pregnancy almost always tells us that when her last menstruation occurred it was several days overdue, so that while salpingitis disposes many patients to menstruate ahead of time, ectopic gestation apparently delays the last or alleged menstruation, and when it appears it differs in one or several particulars from the previous menstruation of the individual.

All who are experienced in suprapubic sections for pelvic disease will surely join me in the assertion that a very considerable percentage of women who have tubal pregnancy are found when operated on to have diseased tubes; thus it must be apparent that in a certain percentage of the cases of ectopic gestation there are two symptom-producing factors, namely, salpingitis and pregnancy within a tube.

I do not wish here to refer particularly to the etiology of ectopic gestation further than to express the belief that certain, but usually not very gross, pathologic changes accruing from salpingitis, constitute the chief, if not the only cause of ectopic gestation. If this be true, it must be apparent to you that very often the diagnostician will be confronted by these two symptom-producing factors: consequently, it must happen that a certain small percentage of all cases of tubal pregnancy will exhibit to a certain extent the symptoms of salpingitis together with the symptoms of pregnancy within the tube.

The failure to always differentiate tubal pregnancy and salpingitis is of little consequence, for the reason that the operation is undertaken in the interest of the patient, and while the abdomen is opened, the pathology can be removed.

It is the existence of salpingitis, the great sterilizing disease of women, which accounts for the fact that terms of sterility varying from three to fifteen years or more, so commonly precede the occurrence of tubal gestation. A previous attack of salpingitis not only causes the sterility, but also renders the tube incapable of conveying the fecundated ovum to the uterus.

(c) Uterine polypus and papilloma uteri produce menorrhagia and metrorrhagia, but are not prone to produce colics. Intrauterine fibroids cause menorrhagia and metrorrhagia and, to a certain extent, pains which might be mistaken for the slighter colics of tubal gestation, but none of these conditions arising from neoplasm are very likely to produce the severer colics of ectopic gestation.

(d) Cancer of the uterus is not always productive of pain, but when it produces pain as well as metrorrhagia the history may be very like the history of the non-tragic stage of ectopic gestation. The physical examination may, by excluding a painful tube or tumor at either side of the uterus, together with inspection of the cervix, eliminate doubtful points in diagnosis.

(e) Those who have removed ovarian cysts with twisted pedicle must have observed the enormous size of the Fallopian tubes in such instances. The uterus also participates in these hypertrophic changes. The tissue engorgement incident to such enlargement often renders menstruation atypical and produces metrorrhagia. The excruciating colics, the steady pain, the soreness of the abdomen, and the fact that it springs from one side of the pelvis, together with the metrorrhagia which so often follows the twisting of a pedicle, afford one of the best counterfeits of ectopic gestation. Such cases are, of course, comparatively rare and are not difficult to diagnosticate unless the tumor which is twisted on its pedicle was not known to exist prior to the colics and the atypical menstruation. Again, in ovarian cyst with twisted pedicle the last menstruation is not usually belated.

(f) Every experienced general practitioner knows that now and then he has met with a woman who exhibited metrorrhagia for two, three, four or five weeks in the earlier course of a progressive intrauterine gestation. The absence of colics, and possibly the presence of morning sickness, the very soft condition of the cervix, a gradually enlarging uterus with no special pain at either side of it, are the particular items to be observed in differentiating this condition and ectopic gestation.

The following rather carefully taken histories of six cases are offered for whatever value they may possess:

CASE 1.—Referred by Dr. D. T. Bowden.

Patient.—Mrs. H., aged 32; married thirteen years. Six children, youngest child 11 months old.

History.—Menstruation was re-established five months after the birth of her last child. It recurred every 21 days and was painless. Her last menstruation was due May 1, according to the habit since the last child was born. Blood was not seen until May 5. It was somewhat brighter in color, thus differing from her usual menstruation. Blood had appeared almost every day for eighteen days, or until May 23, when she consulted Dr. Bowden, and he at once sent her to my office with a diagnosis of ectopic gestation. The patient herself described the blood "as like that from a cut finger."

This patient had very severe colics in the hypogastric region and to the right of the uterus on May 6, or one day after the appearance of metrorrhagia. In the seventeen days following this colic she had three distinct colics, and went about but little, because being on the feet produced pain in the right iliac region.

Examination.—On physical examination the right tube was found very much enlarged and tender under pressure. Coinciding with the diagnosis of Dr. Bowden, she was referred to the hospital, where I did abdominal section on the day following. The abdomen contained a pint of fluid blood. There were some rather large clots in the pelvis and the tube still enveloped the fetal products. The blood found in the abdominal cavity had escaped through the ostium abdominale. Patient made a complete and perfect recovery. This patient of course consulted a physician, and was operated on in the non-tragic stage of the disease, but her symptoms were not sufficiently pronounced to lead her to Dr. Bowden until eighteen days after the primary symptoms.

CASE 2.—Referred by Dr. Miller, Netcong, N. J.

Patient.—Aged 22; married three months. No previous pregnancies.

History.—Until the age of 18, her menstruation recurred every twenty-eight days and continued for about three days. After that age the flow lasted from five to seven days, and she occasionally had a little pain with menstruation. She menstruated regularly and normally on February 10, March 10 and April 5.

On May 23, following the menstruation of April 5, she was taken with severe pains in the hypogastric region and right iliac region. She had two or three very severe pains in quick succession. They occurred while she was at the grocer's near her home and for a time she could not move.

The next day, or May 24, she had another very severe pain in the lower abdomen. Blood then appeared from the vagina for the first time since April 5. The cramps "doubled her up," and the pains, although severe in her pelvis, extended to the upper abdomen. The pains passed off in an hour or so, but the soreness of the abdomen continued for thirty-six hours. She then felt better, got out of bed and went about some, the blood continuing from the vagina. Very little pain for the two or three days following, after which another attack of pain came even worse than the previous ones. This severe colic was also attended and followed with soreness over the abdomen, which did not entirely pass off for several days. After getting up from this attack she went about, although she had slight pains now and then and blood continued to appear from the vagina until June 7 or 8. Following one of the last severe colics, urination began to cause pain across the abdomen, and she had difficulty in emptying the bladder.

Her color was becoming sallow, and after the last attack, which was on June 8, she became very pale and her lips were colorless. After colic of June 8, she had quite severe pain almost every day, and especially toward evening, with more or less continued soreness across her.

This patient was seen by Dr. Miller in the very beginning of her colics, who afterward considered that she had tubal pregnancy. On Friday, June 7, a physician saw her who did not share in the diagnosis of tubal pregnancy. This physician saw her again on Sunday, June 18. The metrorrhagia had continued until that time. He then etherized her and curetted the uterus. I first saw her with Dr. Miller on June 24. She then had colics, her pulse was more than 100 per minute, and the temperature slightly above normal.

Examination.—Physical examination revealed a large mass in the pelvis. Uterus pushed upward and forward by the hematocele and was fixed in that position. Blood appeared on examining finger.

Diagnosis.—Pelvic hematocele resulting from tubal pregnancy.

Operation.—She was removed to the hospital and subjected to abdominal section on June 25. Pulse so rapid when operation was reached that I threw in median basilic vein of right arm four pints of normal salt solution before opening the abdomen. The abdominal cavity contained pints of blood and clots, a rather hard hematocele to left of uterus and the right tube had apparently ruptured through the ostium abdominale. Tube still distended with its blood clots, and was two inches in diameter. Tube amputated near the uterus. Patient made a reasonably quick and perfect recovery.

CASE 3.—*Patient.*—Mrs. Z. A. Z., aged 24; married three years. No intrauterine pregnancies.

History.—From the age of 14 patient menstruated regularly and painlessly every four weeks, flow always lasting one week.

On January 29 patient had severe pain in left iliac region, across the abdomen and in her back. Four days after the appearance of these colics blood appeared from the vagina. It should be said that when the pains and metrorrhagia appeared that menstruation was about due. Right after the severe colics she had some embarrassment in urination. A physician was called, but I am not able to say who he was. She felt so badly and so weak that she remained in bed for about two weeks, during all of which time the metrorrhagia continued. Soon after she began to go about she fainted.

The atypical menstruation with colics every few days continued for two months, or until March 29, when she began feeling rather better and stronger. At that time another physician was called, who sent her to my office for diagnosis. She then looked very pale, was very sick, had a pulse about 80, and her husband, who accompanied her, informed me that she had lost a good deal of flesh.

Examination.—Physical examination revealed a boggy mass in the pelvis, and a diagnosis was made of hematocele from tubal pregnancy. The day following I made a median line suprapubic incision, removing therefrom a quart or more of fluid blood, a pint or two of clots and the Fallopian tube which contained a pregnancy in its isthmian portion, which had evidently ruptured in the beginning of her sickness. The hemorrhage had occurred off and on from the ruptured isthmian portion of the tube for two months after the primary symptoms until the patient was operated on. There were very strong organized clots surrounding the cornua of the uterus, which were so very firm that I at first mistook the tumor for the uterus. She was still bleeding from the rupture. The patient made a good and complete recovery.

This case presented symptoms which were close to alarming. Her worse hemorrhage probably occurred in the beginning of her complaint; however, after that the symptoms were at no time any way alarming, and she progressed into what might be termed the non-tragic stage of the disease.

CASE 4.—*Patient.*—Mrs. M., aged 32; married several years.

History.—No pregnancies excepting a pregnancy of the right tube, which I operated on two and a half years ago in the non-tragic stage of the disease. At that time the abdomen contained a quart or more of blood, and I removed the unruptured tube, which contained two small feti.

I was called to this patient by her physician on May 1, 1907. She had menstruated regularly and painlessly every four weeks, her last normal menstruation recurring on April 15, 1907. On April 25, which was ten days after her last menstruation, blood began to appear from the vagina in small quantities. In connection with the metrorrhagia she had what she termed "terrible pains," most severe in left iliac region, and running up to the left lumbar region.

I at once made a presumptive diagnosis of tubal pregnancy. For two or three days before the appearance of her colics and metrorrhagia the patient felt very tired. Colics occurred within an hour or two from the appearance of blood. Some days the blood was bright and at other times dark and "chocolate colored." Patient felt much easier when quiet. She remarked that for a day or two after the finish of her menstruation of April 15 she had a sort of "gummy leucorrhea."

During my absence from town in the few days following this, the patient was seen by another physician, who was informed of my presumptive diagnosis, and who, after making a physical examination of the patient, expressed the opinion that she was simply suffering from neurasthenia with some congestion about the left ovary and tube. The patient had some headache, a little vertigo, some nausea and vomited once. Pulse about normal. From the time I first saw her until May 16 the metrorrhagia continued, the pulse remained about normal and she had occasional colics with pain in left iliac region.

On May 12 she was awakened at 3 in the morning with severe colic accompanied by an increased flow from the vagina. The severe pain only lasted a few minutes. During this colic and for a time afterward she lay on her back with the knees well drawn up. She also noticed that her left breast was decidedly fuller than the other breast.

May 18 patient had a rather severe colic, which was followed with a good deal of soreness.

May 20 she had some slight pains now and then with soreness through the pelvis while sitting.

It might be said that from May 1 to May 25 this patient was not able to attend to her household duties, remaining part of the time on the couch, and was very little on her feet, the metrorrhagia continuing, although on many days it was a mere show of blood. At times the pulse was subnormal.

Examination.—The physical examination on May 1 showed a decided tenderness of the left tube, and it appeared slightly enlarged. Several physical examinations were made from May 1 to May 28, and the tube appeared larger as time progressed, but on May 25 it was found to be an inch or an inch and a half in diameter, and very tender under pressure. During all this time she was prepared to go to the hospital on a moment's notice had tragic symptoms presented.

Operation.—On May 28 I made a median line suprapubic four-inch incision. The abdomen contained probably six ounces

of dark fluid blood and scarcely any clots. The tube was distended, dark red in color, bent on itself, and dilated to about one and one-half inches in its largest diameter. I exsected the entire tube and appendix. At the time of this writing the patient appears to be making a perfectly smooth course toward recovery.

The tube was hardened in a solution of formalin and sections revealed a very small sac in the isthmian portion. The distension of the tube was due almost entirely to hemorrhage within it. The blood in the peritoneal cavity had escaped through the ostium abdominale. From the gross appearances of the specimen I judge that the pregnancy was not itself progressive after about the tenth or twelfth day. All the symptomatic changes which followed were simply due to hemorrhage arising from the pregnancy.

This case exemplifies in both her first and second ectopic gestations the easy possibility of diagnosticating and operating in the non-tragic stage of the disease. The fetal products in both instances were at the time of operation perfectly enveloped by the dilated tube.

CASE 5.—Referred by Dr. J. A. Maclay.

Patient.—Mrs. E. K., aged 39.

History.—Has had eight children and a number of abortions. Patient menstruated regularly and normally eight weeks before she was sent to the hospital.

Three weeks before being admitted to the hospital or about May 5 or 6, there was a little metrorrhagia, very slight, only spottings of blood. She may have had a little pain with it; however, the metrorrhagia continued, and there was no special complaint made of pain until May 17, when she had severe colics with some steady pain between them for three or four days. During this time she was not able to go about.

After May 21 or 22 she had occasional pains in the abdomen. Her first series of pains, lasting four days, were all through the lower abdomen, but referred more particularly to the right iliac region. Patient remarked that she never had pains like them before. No increase of temperature. Pulse about normal. No difficulty in urination. Slight loss of color.

Operation.—Suprapubic section made May 27, 1906. Quite a quantity of blood in the abdominal cavity. Right tube still enveloped the fetal products, but was distended from hemorrhage within it to a diameter of about one and one-fourth inches. The blood in the abdominal cavity had escaped from the ostium abdominale. Left tube diseased and enlarged. Both tubes were exsected. Also the appendix vermiformis.

This patient sought a physician when the colics occurred after the appearance of metrorrhagia. Was later operated on without at any time having been particularly ill, and therefore did not pass beyond the non-tragic stage of the disease.

CASE 6.—Referred by Dr. Tuers.

Patient.—Mrs. P., aged 25.

History.—Married to present husband ten months, to her first husband two years and three months. First menstruated at 12. She menstruated every twenty-eight days from then until the present illness. After the age of 16, when she had some slight womb trouble, she always had terribly severe pains the first day of menstruation, with a dull heavy feeling in the pelvis on the day following menstruation. The menstrual flow always lasted five or six days, and she soiled from eighteen to twenty napkins. No pregnancies until the present tubal one.

This patient menstruated regularly for the last time on Feb. 12, 1907. After that she saw no blood until March 16 or 17. At that time she had little pain across the hypogastric, and blood appeared from the vagina. The pain in the hypogastric was not nearly so severe as the pains accompanying her usual menstruation. A little blood appeared from the vagina almost daily from March 17 until April 1 or 2. She felt moderately well from the cessation of the metorrhagia on April 1 or 2 until April 21. At that time, while out carriage riding, she felt a sort of "chilly coldness" across the lower abdomen; however, she had a good dinner when she returned from the ride, and retired at 8:30 o'clock. Shortly afterward she was awakened from sleep with severe pain in the hypogastric region. This colic she described as more severe than any pain of her dysmenorrhea. The pain was not referred to either side of her pelvis, but descended to the hypogastric region. She tried lying on her back with her knees drawn up, she sat up and leaned forward in bed, she assumed all sorts of positions, none of which afforded her any relief. She vomited. The pains entirely ceased in twenty minutes or half an hour, after which she slept through the entire night.

On the next morning, Monday, April 22, she felt a tenderness across the lower abdomen, particularly noticeable when walking; however, it was not sufficient to prevent her from remaining on her feet most all that day. A little blood appeared from the vagina, which was the first observed since April 1 or 2, which date represented the conclusion of a two weeks' metrorrhagia.

She slept fairly well on Monday night, and on Tuesday morning, April 23, she was awakened at 6:30 with a severe pain in the hypogastric. It was even more severe than the one on Sunday night, thirty-six hours previously. This colic was attended with severe pain in right shoulder. She says that the pain ran all the way down to the right iliac region. This was the first that pain was referred by the patient to one side of the pelvis. While the pain was severe she vomited three or four times. The severe colic lasted half an hour or so, and was attended and followed with a great deal of soreness in the lower abdomen, on which account she remained in bed all of Tuesday, April 23.

On Wednesday she went about the house, although still feeling some soreness in the lower abdomen.

On Thursday there was much less soreness in the abdomen and she remained up most of the day. On that evening, April 25, at 7 o'clock, and while at dinner, she experienced a severe pain in the epigastric region. Supposing that it was in her bowels she took some citrate of magnesia. The pains increased, and she vomited and remarked "that she felt as though she was dying." She was helped to bed, where she moaned with pains. Dr. Tuers was sent for,, this being the first that medical attendance was sought or obtained by the patient. He was unable to perceive any pulsation at either wrist. She appeared pronouncedly exsanguinated, and, after obtaining a very little history from her, he diagnosticated the case as one of tubal pregnancy.

I saw the patient with Drs. Tuers and Bullen just one hour after the beginning of her colic. There was not the slightest flickering of pulse in either wrist, said she was thirsty, had extreme pallor, but did not exhibit the restlessness which is often seen in the tragic stage of tubal pregnancy.

Operation.—She was at once removed to the Paterson General Hospital and taken directly from the ambulance room to the operating table. A few whiffs of ether were given. A vein was opened in her left arm in which was infused three pints or more of normal salt solution. Very soon after the administration of a little ether and the beginning of the intravenous injection a pulse was perceived. In five minutes more she had a readily countable pulse in her right wrist. The abdomen was opened, a quart or two of dark fluid blood was removed from it. A lot of large, dark clots were taken from the cul-de-sac of Douglas, and a distended right tube measuring two inches in diameter and apparently still enveloping the fetal products was tied off and removed. The patient was sent to her room with a good pulse of 130, and a respiration of 40. The blood which was found in the peritoneum in this case had escaped from the ostium abdominale. There was no evidence whatever of a perforation of the walls of the distended tube. This patient made a rapid and complete recovery.

A hardened section of the tube revealed a fetus about one and three-eighths inches in length.

Although this patient was not seen by a physician until well in the tragic stage of the disease, still she gave an entirely typical history of the non-tragic stage of the disease. Her failure to consult a physician was probably due to the fact that she was accustomed to have very severe pains with menstruation.

A simply presumptive diagnosis of ectopic gestation may be based on the two distinct items of colics and atypical menstruation.

If we would know what constitutes an atypical menstruation for any particular individual it is absolutely necessary for us to obtain definite information regarding not only the present atypical, or alleged menstruation, but also of the menstruations preceding it for a term of three or four months. We must also learn the nature, duration and character of the earlier menstruations, and the ordinary intervals from the beginning to beginning.

Inaccurate history-taking will lead to incorrect presumptions, if not also to faulty and incorrect diagnoses.

Forty-nine out of every fifty cases of tubal pregnancy present symptoms whereby the condition can be diagnosed with reasonable certainty before the tragic stage is reached.

Probably forty-five out of every fifty patients consult a physician in the non-tragic stage of the disease.

So soon as diagnosis is made operation is indicated, and I believe that the best interests of the patient will generally be subserved by immediate resort to operation whether the patient exemplifies the non-tragic or tragic stage of the disease.

I have known but one patient to decline operation in the tragic stage.[2] She consented six hours later, was taken to the hospital and died while being conveyed from the ambulance to the operating pavilion.

Three women have declined operation in the non-tragic stage. One of these presented tragic symptoms six days later and died shortly after her admission to the hospital in spite of our efforts to save her.

In dealing with women in the non-tragic stage our advice to them should be governed by the knowledge that from one-half to two-thirds of all cases of ectopic gestation, uninfluenced by operation, eventuate in death, and that if all are promptly and properly operated on, ninety-nine out of every one hundred should recover.

DISCUSSION.

DR. C. JEFF MILLER, New Orleans, La., asked Dr. Harris whether he has found tenderness of the tubal mass in the pretragic stage. Dr. Taylor of England, he said, lays great stress on this point, and insists that the mass is not sensitive until hemorrhage begins in the tube.

DR. F. F. LAWRENCE, Columbus, Ohio, considered this subject one of great importance because the case is seen first by the physician, who too frequently does not recognize that it is an extrauterine pregnancy until it ruptures. If the mortality of extrauterine pregnancy is to be reduced, physicians must be taught that the diagnosis must and can be made before rupture. As to the frequency of the condition. On three different occasions in the past few years Dr. Lawrence has had three, and on one occasion four cases of extrauterine pregnancy coming under his care in a period of ten or twelve days. There was history of prior tubal disease, emphasizing the importance of tubal disease as a causative factor. The advisability of leaving the opposite tube when operating for extrauterine pregnancy is a question of importance. In Dr. Lawrence's experience subsequent extrauterine pregnancy occurred three times. The points of particular value in making the diagnosis, he said, are pain of a spasmodic though undefinable sort (not collicky); hypersensitiveness of the cervix; breast signs of pregnancy more marked in the first few weeks than in normal pregnancy. The irregular flowing is not likely in the first few days or weeks to be accompanied by any shedding of decidua. The cervix is soft.

DR. G. L. HUNNER, Baltimore, Md., said he knew of no more serious intra-abdominal condition which has the diagnosis written all over its face any more plainly than has extrauterine pregnancy, and at the same time no condition which is more often overlooked by the internist. A point helpful in the diagnosis of extrauterine pregnancy is that of going back of the history and seeing if there have not been attacks of repeated so-called ovarian neuralgia. It is, he said, surprising to find how many of these previous attacks of ovarian neuralgia were really attacks of appendicitis. He has been so impressed by this fact in going over his histories of extrauterine pregnancy that he deemed it worth emphasizing. When operating, if the patient is in a suitable condition, one should not neglect to look at the appendix, even if there is a tubal pregnancy on the other side. The appendix should be examined in every case where the patient is in a suitable condition, and should be removed if there is any evidence of disease. Dr. Hunner warned the general practitioner and the specialist not to attempt to make a too careful bimanual palpation in these cases. The history, he said, is sufficient in practically all cases without attempting to outline the tender little mass generally present.

DR. J. H. CARSTENS, Detroit, Mich., did not agree with Dr. Harris that the diagnosis of this condition is an easy one to make. In the first place, the women never know that they have extrauterine pregnancy. They feel all right, and it is only when symptoms appear that the woman is made aware of her condition. One can very often be mistaken in these cases, for a woman will have some old chronic trouble and will have an ache on the side on which she has had trouble. The doctor is called in and treats her for another one of her usual attacks. Dr. Carstens did not blame the family physician, in the absence of flow and the rapid pulse indicative of hemorrhage, for making a mistake. On one occasion he was called to see a woman on whom he had operated for left tubal disease. The doctor in attendance said it was a case of appendicitis and Dr. Carstens agreed with him. There was pain over McBurney's point; temperature 100.5, pulse 84. On opening the abdomen much blood and a ruptured tubal pregnancy were found. Another instance was that of a woman thrown out of a street car. Dr. Carstens found a boggy mass in the posterior cul-de-sac, and the pulse was increased from 100 to 150. He thought that the woman had an extrauterine pregnancy which had ruptured when she was thrown out of the car. She had flooded a little before. He opened the abdomen and found neither blood nor extrauterine pregnancy, but a pregnant uterus tilted over into the cul-de-sac. He straightened out the uterus and closed the abdomen. The pulse went down and the woman recovered. These two cases, Dr. Carstens thought, illustrate the difficulties met with in the diagnosis of these cases.

DR. J. M. BALDY, Philadelphia, Pa., believed there are instances in which the most expert diagnostician will go astray in the diagnosis of extrauterine pregnancy. He referred to one instance, the case of a woman whom he had attended in extrauterine pregnancy. Three or four years afterward the same woman suspected a second extrauterine pregnancy on the other side. For four weeks Dr. Baldy did not dare suggest operation because he could not make a positive diagnosis, although he suspected it, and so informed the patient. He went south for two weeks, and in the meantime the family consulted another gynecologist, who pronounced the condition extrauterine pregnancy. The woman suddenly had another attack of pain, and an operation followed, and there was found a ruptured extrauterine pregnancy. There was no mass at first, but everything else pointed to the diagnosis. When the mass did show it was too late, as the case was out of Dr. Baldy's hands. The other man found it and took it for a prolapsed ovary. This difficulty, he said, is found in a certain number of borderline cases of ectopic pregnancy. In such cases no man can be blamed for a failure in diagnosis. In the ordinary routine class of cases no man will make a mistake.

DR. P. A. HARRIS, Paterson, N. J., said that his paper was not addressed to experts. He was sorry that any such had felt it so difficult to diagnosticate ectopic gestation, or that he should have committed the error of referring to an ascending pulse as requisite, or thought it necessary to wait for the

2. Referred by Dr. R. Atkinson.

tragic symptoms of extrauterine gestation. He did not think that any one can always be right in a diagnosis of tubal pregnancy. If he is right in nine cases out of ten it is good enough. He is accustomed to say to women who he believes to have ectopic gestation that he is sometimes wrong in diagnosis, but generally right. He thought it a duty to say this whenever in doubt, because there is no way, except by exploratory operation, of definitely determining the existence of tubal gestation. Regarding Dr. Hunner's remarks and those of others pertaining to tubal disease, Dr. Harris said it must be remembered that the acquired dysmenorrhea in his case came from tubal disease of most moderate severity. The tubes did not present the gross appearances of disease, yet they were sufficiently affected to prevent the impregnated ovum reaching the uterus, and ectopic gestation followed.

THE SYNCYTIUM.*

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DEFINITION AND EMBRYOLOGY OF SYNCYTIAL TISSUE.

The word "syncytium" is derived from two Greek words, signifying together, a hollow vessel.

1. *Biology Definition.*—Syncytium is tissue in which the cell or partition walls are wholly wanting and the cell bodies fused together so that the tissue consists of a continuous mass of protoplasm in which nuclei are embedded.

2. *Zoology Definition.*—The syncytium is the ectoderm of a sponge.

3. *Definition as to place in human anatomy.*—The syncytium is one of the epithelial layers of the chorionic villi. It is of fetal origin; this has been proved by the fact that in men and children neoplasms have been found of which syncytial tissue formed one of the component parts. Peters,[1] Minot[2] and Marchand[3] have demonstrated conclusively that the syncytium is derived from the primitive ectoderm and mesoderm or trophoblast. These investigations have opened the way into a broad field for the scientist; they have thrown a new light on pathologic findings on the subject of neoplasms whose derivation has hitherto been unknown.

The cell of syncytial tissue, protoplasm without cell wall, contains from one to eight nuclei; these nuclei in dividing follow the law of indirect division designated mitosis or karyokinesis. In nearly all respects the cell of the syncytium meets the requirements of the cell described as the foundation of all biologic research, differing from it in no essential feature. The syncytium, in common with all embryonal tissue, has the power to proliferate; this property of the syncytium was first observed by Ludvig Frankel[4] in 1895.

McFarland[5] advances the theory that in nearly all cases of normal pregnancy the syncytial tissue, by its cellular prolongations, invades the uterine muscularis; and that these prolongations usually disappear before the termination of the period of pregnancy. He further claims that by examination of postpartum uteri it has been demonstrated that the syncytial tissue may persist for a considerable length of time and frequently interfere with successful involution.

HISTOLOGY OF NORMAL SYNCYTIUM.

The syncytium is made up of a continuous granular protoplasmic mass in which there are numerous nuclei but no well-defined cell wall. The protoplasm stains readily; it is rich in chromatin nodules; its surface is covered with projections of newly formed tissue.

These histologic features are true for all normal syncytial tissue wherever found; the syncytium, one of the layers of the covering of the chorionic villi, is a typical exposition of this fact.

Circulation.—As the ovum surrounded by its trophoblast or nutrient bearer sinks into the uterine endometrium, it sends out prolongations which are designated "chorionic villi;" a part of these villi end freely, while others pass into the placenta uterina and become firmly connected with it. These villi at first have the form of short protuberances, consisting of gelatinous tissue and a layer of epithelium, which covers not only the villi, but also the whole chorionic membrane on its uterine side. It is believed, from recent observations, that when the circulation in the villus is completed, the ectoderm differentiates into two layers, a superficial one in which the cell boundaries disappear, so that it consists of a continuous layer of protoplasm in which the numerous nuclei are embedded, and an inner layer consisting of well-defined cells. This former is designated the syncytium, the latter Langhan's layer of cells. These two layers are separated sharply from one another; the inner layer having smaller nuclei, the outer a special affinity for acid dyes, and stains more deeply.

The villi with their covering burrow into the placenta or decidua until they reach the sinuses of the maternal blood, from which they derive the necessary nourishment; the villus in this manner availing itself of the nearest source of supply for its maintenance, the human parasite living on the life of its host. This continues throughout pregnancy, and although toward the fifth month Langhan's cells begin to degenerate and by the end of the term may be entirely wanting, the syncytium generally perseveres with its characteristic features. In some localities there occurs a thickening or a piling up of the syncytial nuclei; these are termed "proliferation islands." Again, there are portions which are reduced in thickness.

Through the umbilical cord there enter the membrana chorii two umbilical arteries which carry the blood of the embryo to the placenta fetalis, where they branch freely, breaking up into many smaller branches and forming a capillary network in the villus. The villi then grow into the decidual tissue, and the system of capillaries becomes dilated to a system of spaces; the villi are thus surrounded by blood, virtually bathed in blood.

Many claim that the intervillous spaces are the original spaces between the placenta fetalis and the placenta uterina; in that case at first they contain no blood and become filled only when the maternal vessels open into them (or are opened into them).

Branches from the internal iliac enter through the muscular coats of the uterus to the outer layer of the placenta uterina; their wall becomes thin and they lie directly on the septa placenta, where they empty into the intervillous spaces through the openings in the septa. The veins also empty into these spaces and wide lacunæ are found instead of the usual capillary net-work; these veins are thin walled.

The intervillous spaces thus contain material blood, while in the chorionic villi the capillaries under the epithelial layers are of fetal origin.

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* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Fifty-eighth Annual Session, June, 1907.

1. Centrbl. f. Gynak., No. 29, 1902.
2. Human Embryology, 1902. The Implantation of the Human ovum in the uterus.
3. Zeitschrift, 1898, xxxvii to xxxix.
4. Arch. f. Gynak., xlviii, 1895.
5. American Jour. of Obstetrics, xlix, 469.

There is thought by some investigators to be no communication between these capillaries and spaces; that while there may be a diffusion of gases, fetal and maternal blood never intermingle.

NORMAL FUNCTION OR PHYSIOLOGY.

1 Ovum enters by the syncytium; 2, acts as gland and filter; 3, carrier of nourishment; 4, placental secretions act through syncytium; 5, acts as enzymes; 6, acts as true blood gland; 7, normal deportation of chorionic villi.

The syncytium furnishes a means of entrance for the ovum into the uterine mucosa, the maternal element being destroyed by the histologic properties of the syncytium. The lacunæ of the decidua are formed by the chorionic villi, covered with the syncytium, burrowing canals into the thickness of the serotina. As the plasmodium of the syncytium is not divided into cells regularly, the exchange of material between fetus and parent is thereby facilitated, this tissue acting as a filter as well as a glandular organ.

Another feature of the syncytium is to pass along the products of fetal life into the maternal circulation; it also acts on the maternal blood, carrying nourishment from it to the fetus. The syncytium modifies the substances which pass from mother to child, by a diastatic action, playing the part of the enzymes.

That the placenta possesses an internal secretion is a matter which does not admit of doubt; it has been demonstrated that a protolytic sub-ferment exists in this secretion. The chemical composition of this ferment is not known; some investigators think that there may be fat, lactic or glycogen ferments; at any rate the internal secretion of the placenta acts through the syncytium; this secretion may act on the fetus through the whole of pregnancy. Some authors believe that this secretion produces many of the phenomena of pregnancy, such as vomiting and chloasma.

Veit[6] has written of the normal deportation of villi or parts of villi together with their syncytial covering; he has proved that they may be carried to the most remote parts of the anatomy, and yet the general or cytolytic equilibrium of Nature may remain undisturbed. Whether this has any bearing on the normal function of the villi is not known as yet; in these cases this material is either absorbed or it remains unmolested and unmolesting in so far as the contiguous tissues are concerned. Hence, this metastasis might be termed a normal or physiologic function.

During some periods in the life of the syncytium it forms definite outgrowths or buds, consisting of masses of protoplasm containing round, deeply staining nuclei, similar to those surrounding the villi; cross-sections of these buds present so-called giant cells. These may take part in this normal metastasis.

PATHOLOGY CAUSED BY THE SYNCYTIUM.

Many and voluminous works have been written about the pathology of different parts of the human anatomy; pathology produced by the derangement of function in different tissues, glands or organs. The syncytium is a gland and it is but reasonable to believe that pathology may result from a derangement of its glandular function; that insufficiency of its functions might allow the passage of poisons from fetus to mother.

Metastasis.—One of the first manifestations of the syncytium acquiring a pathologic condition may be shown by metastatic deposits; this property of metastasis is not peculiar to abnormal syncytium; it is to be seen in the neoplasms carcinomata and sarcomata as well.

Metastasis is the property by which particles or cells of an original neoplasm may be carried by means of the blood and lymph channels to any adjacent or remote parts of the body, and may there remain quiescent or develop into second growths similar in all respects to the original neoplasm.

Some are of the opinion that this property of metastasis forms the criterion in the comparative diagnosis of benign and malignant neoplasms; again, the view is held that metastasis is one of the strongest indications of the infectious nature of certain neoplasms. Roswell Park[7] says concerning metastasis:

> This is in every other disease considered to be one of the most significant expressions of infection, yet until recently few of those who have willingly accorded to metastasis its now common interpretation in tuberculosis have been willing to give it the same dignity as a factor in the spread of cancer and an important explanation of its nature. Why should every other disease characterized by metastasis be everywhere viewed as parasitic and cancer, in which occur some of its most positive expressions, be denied? Metastasis has the force and significance of an inoculation experiment performed under favorable circumstances.

Theories of Toxins.—After the growth and formation of the placenta, when the embryo becomes the fetus, the blood of the mother generates in the serum antibodies which antagonize the invasion of syncytial tissue; the presence of syncytial elements in the blood determines the formation of a special cytotoxin, in this instance called syncytio-toxin.

Ehrlich's[8] side-chain theory is the foundation for the following: An organism has the power to produce anti-cells or antibodies which have the power to prevent excessive proliferation of these fetal cells or chorionic elements, and thus to keep a cytolytic equilibrium.

In this case the toxin and the body antagonizing this on the maternal side is designated anti-syncytio-toxin. This anti-syncytio-toxin has the power to dissolve or render inert any syncytial tissue in excessive proliferation.

Marchand believes that normally the syncytium exercises an influence in determining the nourishment of the villi by the maternal blood, and that normally the fetal blood is of minor importance in supplying the villi with nourishment.

The study of opsonins and the opsonic index is at present occupying the minds of many prominent observers; whether the future study of this subject will have any bearing on the toxins as a causative agent in the pathology of this tissue, and if proved will point out the remedy by strengthening the opsonic power of these agents now thought to be normally present in the blood, remains to be proven.

Eclampsia.—The pathology of syncytial tissue is an interesting study; in the light of our present knowledge of syncytial tissue, the syncytial theory of eclampsia seems to be a reasonable one. It has been proved beyond a doubt that the villi are carried by the blood. Veit and Opitz[8] believe that the syncytium covering these villi is dissolved in the maternal blood, producing syncytio-toxin; normally this is counteracted by the antibodies or anti-syncytio-toxin produced by the blood. In eclampsia there is a lack of these antibodies.

6. Deportation von chorionyotten, Ztschr., f. Geb. u. Gyn., xliv, 466.

7. Park: Principles and Practice of Modern Surgery, 1907, page 257.

8. Ztschr. Geburt u. Gynak., vol. xlix, 1903.

A similar theory advanced by Leipman[9] is that puerperal eclampsia is an autointoxication resulting from a toxin found in the albumin molecule, and separated in the placenta through faulty action of the syncytium on the albuminous bodies of the maternal blood. Normally these toxins are neutralized by antitoxin substances; when this neutralization does not take place poisoning results; the liver and kidneys protect the system against the poisoning, hence the prominent symptoms are those of a disease of the kidneys; the liver should retain these toxic albumins. In some cases only a small amount of poisoning is produced, and this is retained by the liver, hence there are no convulsions. In other cases much poison is produced; a portion is retained by the liver, while another portion causes convulsions during labor. When enough of the poison is retained there are no attacks until after labor has ended, and then the abstraction of blood at labor, the formation of the milk secretion, etc., act as protecting factors. When the system is susceptible, from anemia or any other condition, the poisoning takes place more easily and albuminuria and convulsions occur.

The theory by Veit[6] that the cause of eclampsia is the wandering of syncytial elements into the circulation is opposed by Ascoli, who considers that there is an overproduction of syncytiolysis, which is found in accordance with the laws of over-compensation.

Weichardt[10] is of the opinion that the syncytio-toxin produced by the syncytiolysis and not neutralized by the system is the causative factor in this condition. These theories as to the etiology of eclampsia are very similar, and they all place great importance on the fact that the liver participates in this autointoxication. Many microscopic examinations have been made which tend to prove this assertion.

Schauta,[11] in 1896, gave expression to the following: "Pregnancy seems to favor the formation of gallstones." Ten years earlier Jürgens[12] pointed to the possible hepatic origin of eclampsia. During the twenty years that have elapsed since his findings were published, we have had reports from many prominent writers testifying to the fact that it is the rule and not the exception for hepatic changes to take place during eclampsia. Among these writers Ewing[13] may be mentioned; he writes that hepatic changes take place in all cases of eclampsia that he has witnessed. He claims, further, that hemorrhagic hepatitis occurs in all typical cases of acute fetal eclampsia at term, and in at least 95 per cent. of all cases of any variety of eclampsia.

Stone is of the opinion that the toxema of pregnancy, eclampsia, and the yellow atrophy of the liver are one and the same disease, and that this one symptom, hemorrhagic hepatitis, is pathognomonic of eclampsia.

Ewing[13] goes further and divides the disease into three classes, according to the severity of the hepatic lesion.

It is claimed that toxins, usually from fetal metabolism, pass into the maternal circulation and act as the causative agent in eclampsia. Dienst[14] concludes that there is an abnormal permeability of the placenta in eclampsia which allows the fetal poisons to pass over into the mother's blood.

The liver in eclampsia is generally pale, hemorrhagic areas are present; hepatitis parenchymatous and hepatic hypertrophy may also be present. According to some observers, the most marked change occurs around branches of the portal vein, in many of which thrombosis often occurs.

Evans[15] wrote recently:

> Eclampsia is due to a toxemia; this toxic material exerts its deleterious action on the liver, the kidneys and the general nervous system. It is generally accepted that the liver plays an important rôle, the kidneys secondarily, and that there may be a great degree of toxemia before the kidneys are affected. Varying resistance of these organs to the toxic substances, added to the general resistance of the maternal organism, must cause variation in the clinical expression of the eclamptic condition.

All of these theories may be met by the claim that the syncytium is the main factor in the causation of eclampsia, the fetus primarily furnishing the toxic material.

Very little, if any, doubt exists that the cell emboli noted by many of our most trustworthy investigators are derived from the epithelial covering of the chorionic villi; consequently, they are of fetal origin. It has been abundantly proved also that they pass into the circulation normally in pregnancy. How easy it would be for the effect on their host to be deleterious instead of normal or physiologic, if only their fountain head, the syncytium itself, were at fault in its histology, its physiology, or its biochemical function.

A prominent investigator has shown that iron is present in the basal layer of the syncytium, and has followed it into the stroma of the villus, from which fact he reasons that a physiologic function of this glandular tissue is to carry nutrition to the placenta. If this causative factor of eclampsia were a ferment, even a placental ferment, the syncytium would still be a prime factor, for the syncytium may so change this placental ferment as it passes through it that it may become a toxic agent bearing within itself the properties of the abnormal syncytium, thus bringing about the condition of syncytio-toxin. This syncytio-toxin may also be the result, as some have said, of lack of maternal power to overcome.

The changes in the liver observed in eclampsia may be explained also as being caused by the syncytium. If the function of the liver were weakened previously to the ushering in of pregnancy, it would be unable to do its part in ridding the circulation of these emboli and of this toxin. If, again, the production of the syncytial pathology were too great for the liver to meet in its normal function, disintegration or degeneration must necessarily follow. In either case the changes noted as present in the liver in eclampsia would be manifest.

There is no doubt in my mind that the liver does play an important rôle in eclampsia, and that eclampsia in all its various manifestations is due to the failure of the syncytium to perform its histologic, physiologic or biochemical functions.

Hydatidiform Mole.—Hydatidiform mole is a condition in which swellings varying in size from 2 mm. to 2 cm. may be found at the ends of the villi or in any part of their extent; sometimes several enlargements may form into a chain of excresences. It has been most generally described as a proliferation of the syncytium and of Langhan's layer accompanied by a dropsical condition of the chorionic villi. Webster[16] writes that his-

9. Zur, Ætiologie der Eklampsia, Mitterling Münch. med. Woch., 1905, 637.
10. American Jour. of Obstetrics, April, 1905.
11. Lehrbuch Gynak., Wien, 1896.
12. Fettembole und Metastase von Leberzellen bei Eclampsia, Berlin klin. Woch., 1886.
13. Toxemia of Pregnancy, American Jour. of Obstetrics, 1905, li. 145.
14. Ueberden, Verbreitungsweg, den eklampsiegiftes bei mutter und ihren Leibesfrucht Monatsschrift. f. Geb. u. Gyn., 1904, xix.
15. Treatment of Eclampsia. British Med. Jour., Nov. 3, 1906.
16. Text book of Obstetrics, 1903.

tologically it is a wonderful proliferation of the syncytium and Langhan's layer.

It is a stringy, spongy mass, consisting of pedicled clusters of thin wall cysts. These cysts or vesicles are filled with a clear viscid liquid. There are numerous pinkish-red hemorrhagic areas throughout the tumor mass; the cysts consist of enlargements of portions of the chorionic villi covered with epithelium whose cells are thin, thinner and more flattened than normal. In this epithelium there are marked and irregular proliferations; the epithelium shows also vacuolation and granular degeneration in many parts.

The interior of the villus varies. It consists of delicate branching mucoid cells with fluid between them. The relative abundance of cells and fluid varies in different cases. There may be a less number of cells and an increased amount of fluid between them, or the opposite may be true. Sometimes no cells can be distinguished.

Granular degeneration occurs in the cells; beginning in the core of the villus it disappears and spaces then fill with fluid containing mucin and albumin, rarely blood. The capillaries of the villi are usually obliterated. The uterine muscularis is invaded much more than in normal pregnancy; the peritoneal covering of the uterus may be perforated; this, however, is rare.

This extension of the villi is due to the phagocytic action of their epithelial covering; the walls of the veins and sinuses are sometimes entered and portions of the villi are carried away by the blood vessels. Metastasis may take place in this lesion; the metastatic growths tend to develop in the vulva, lungs, and in fact these may be found in any part of the body; in all respects these secondary growths are reproductions of the primary structure.

Etiology.—There may have been many theories advanced in regard to the real nature and etiology of hydatidiform mole; for many years Virchow's[17] theory that it was due to a myxomatous degeneration of the chorionic villi was adhered to, but he gave us no explanation of the nature of the epithelial covering of the villi.

At the present time Marchand's[3] theory is the one generally accepted: "Hydatidiform mole is due to proliferation of the syncytium and Langhan's layer, accompanied by a dropsical condition of the chorionic villi." His views, then, regarding the function of altered syncytium in helping to produce some such change as is present in hydatidiform mole formation, shows that the syncytium is unquestionably a factor in its etiology.

Findley[18] is of the opinion that impaired nutrition from the maternal blood favors the degenerative changes in the villi.

Direct continuity of malignant and non-malignant hydatids with epithelium covering of the fetal villi has been repeatedly observed, proving that these neoplasms are composed of fetal ectoderm. This continuity of hydatid mole formation with the chorionic epithelial has been demonstrated with no particular difficulty, proving conclusively the truth of the statement. Similar continuity of tissue has been observed in metastasis arising from this lesion, proving that metastases as well are derived directly or indirectly from the fetal trophoblast.

Syncytioma Malignum.—Syncytioma malignum is a neoplasm arising from the syncytium, and the syncytium is undifferentiated embryologic tissue. Again, it is defined thus: It is a peculiar neoplasm of the uterus, peculiar in that it occurs only after pregnancy, in that its parenchyma is derived from two forms of cells, and finally in that its origin is in fetal tissue and its development is in the maternal organism.

Up to 1905 medical literature furnishes us with 260 cases of syncytioma malignum, or chorionic epithelioma.

Microscopic Appearance.—This growth occurs single or multiple, and it may be nodular or pedunculated. In size it is variable; it may be a small growth or one filling the uterine cavity. In its earlier history it is a somewhat firm mass of a pinkish-gray color; later it becomes infiltrated with blood, changes to a soft fragile mass, usually sharply defined from the muscularis. It is prone to ulceration. Irregular or streaked masses are found; these masses are homogeneous and contain nuclei which readily imbibe stain. This is the pathologic syncytium. Cells having well-defined walls are also found; these are clearly defined and are of various sizes and in different stages of proliferation or degeneration. Chorionic villi may sometimes be seen. Protoplasm, pale and clear, its cells may contain from two to eight nuclei, varying in shape and size. The boundary between neoplasm and muscularis is irregular. The microscopic appearance varies considerably, even in the same neoplasm, according to portion examined and distribution and relation of constituent cells.

Etiology.—It is universally agreed that this neoplasm takes its origin in the epithelial covering of the chorionic villi; demonstrations have been made which leave no doubt that the protoplasmic masses found in this growth originate in the syncytium, and that the individual cells are identical with those of Langhan's layer. The syncytium remains throughout pregnancy, while Langhan's layer may disappear; this upholds the theory that the essential factor in the etiology of syncytioma malignum must always be the superactivity of the syncytium, or from its deranged function.

The trophoblast gives to the epithelial covering of the villi the power of penetration in its normal condition; it is not unreasonable, then, to believe that it retains this power in its pathologic condition. Again, normally, there is an advance of fetal cells into the uterine mucosa; this is without comparison in the whole field of human physiology, and it finds its analogue only in the advance of tumor cells. Knowing this, it should not be difficult to believe that these fetal cells, when thwarted in the performance of their legitimate work, should cause the production of a neoplasm which still retains a semblance of its physiologic self.

This tumor is one in which metastasis occurs quickly and early in the history of its formation; this is one of the most distinctive features of syncytioma malignum. Metastasis may occur in tissue either adjacent or remote; it may be the first manifestation of the disease. In gross appearance as well as in its histologic features, the secondary growth is identical with the primary.

Comparison of Syncytioma and Hydatidiform Mole.—Fifty per cent. of the cases of hydatidiform mole are followed by syncytioma malignum; this fact shows that the relation of the one to the other is very significant. Their histology is similar, in that syncytium and Langhan's layer are integral elements in both; metastasis is also common to both.

Teratoma or Embryoma.—Teratomas are embryonal in nature. Marchand[3] and Bonnet[19] trace the origin of these growths from impregnated pole cells or early blas-

17. Archives, 1903.
18. Hydat. Mole. Trans. Gyn. Society, Chicago, 1903.
19. Zur. Ætiologie der Embryoma, Monatschr. f. Geb. u. Gyn., 1901, xiii, 188.

tomeres which are liberated from the cell complex, remain latent for a longer or shorter period, and then in response to as yet unknown stimuli, resume their growth with the still inherent property of forming all the structures found in the normal embryo.

The resulting neoplasm, genetically the twin of its host, may be highly complex or very simple; they may be found in any part of the body. Any embryonal tissue may be found in them; even the chorionic epithelium may be identified, thus explaining the finding of syncytioma malignum in the child or in the male adult. That syncytial tissue is found in teratoma is not to be wondered at, since the syncytium has been proved to be a derivation of the fetal trophoblast, and hence might reasonably be included in neoplasms that Cohnheim[20] calls embryoma. They, teratomas, are derived neither from the syncytium nor from the neoplasm designated syncytioma malignum, nor is the reverse true; they are separate and distinct growths both as to the nature of their pathogenesis and their subsequent history.

Teratoma, then, are neoplasms having the morphologic and physiologic characteristics of the trophoblast of pregnancy; morphologically, they may have syncytium and Langhan's cells, as well as any other embryonal tissue. As an embryonal tissue has at any and all times the faculty of proliferation, teratomas also have the same power. Schlagenhaufer,[21] in summing up cases in which hydatid proliferations were found in teratoma, claims that the ectodermal elements were in these neoplasms in a physiologically favorable condition, although primarily the tumors were teratomas.

There are on record 19 cases of chronic epithelioma of the testicle; in all these cases metastasis of a true chorionic epithelium were found. The view now held in regard to these is that they are genetically equivalent to the syncytioma malignum in the female, and that their actual starting point was from rudimentary fetal membranes.

CONCLUSIONS.

The syncytial tissue is of fetal origin; it is in indirect line from the ectoderm or trophoblast.

The chorionic villi or parts of them, together with their epithelial covering, may normally circulate in the vascular and lymphatic circulation of their host.

It is possible for this circulation to take place during the period of pregnancy from the formation of the chorionic villi to the termination of labor.

This epithelial covering of the chorionic villi has the power to proliferate; this proliferation may take place during the entire life cycle of the syncytium and Langhan's cells.

The syncytium has a physiologic function. If failed in its physiologic function its pathology may prove detrimental both to fetus and host.

The syncytium is the prime factor in the production of a peculiar neoplasm whose histology places it in a class by itself, viz., syncytioma malignum.

The theory of the syncytium being a prime causative factor in the production of eclampsia, is one that is upheld by recent investigations.

The syncytium as a factor in the etiology of eclampsia is the one cause that can meet all claims made by recent investigations and theories; it occupies the middle ground and meets all theories and requirements with the tested results of intelligent investigations.

20. Arch. of Gynak., 1873, lev, 3366.
21. Wien. klin. Wochft., Nos. 22 and 23, 1902.

Hepatic changes are the rule, not the exception, in eclampsia.

Malignant neoplasms of pregnancy have an eroding action on the structures of the uterus; this is the nature of the chorionic epithelium covering the villi, normally.

Chorionic epithelium is also one of the constituents of these neoplasms pathologically. It is reasonable, then, to conclude that their origin is the same and that this activity remains in force in the neoplasms.

I believe the future of chemistry will be to show us the natural cell constituents, and to differentiate the normal constituents of the cell from the products of the different metamorphoses taking place in the different neoplasms.

I believe the future outlook of biologic research is teeming with promise in this particular field; we hope for results great as to cell processes in general, with power to differentiate between the normal and pathologic changes taking place within the cell.

The study of the cause of cell proliferation opens up an avenue pregnant with hope; the greater our knowledge of cytomorphoses the clearer will be our understanding of cell proliferation. Cell growth is controlled by certain stimulating and inhibitory influences; the knowledge of these will explain many of the unknown phenomena, and this knowledge may also explain the cause of the retrogressive metamorphoses that we even now attribute to the cell of many neoplasms, particularly to the malignant neoplasms.

DISCUSSION.

DR. I. S. STONE, Washington, D. C., complimented Dr. Branson on the paper, which was new and original. Unless one understands something about the minute anatomy and pathology of this subject, it is almost impossible to appreciate its importance. The important part is to understand how a process which is normal in every woman who is pregnant will in another case, with conditions apparently similar, become a malignant process much like sarcoma. In an examination of uteri operated on in hospital work, and before realizing the importance of this subject, Dr. Stone found cases of malignant curettage containing chorionic villi, but he failed to appreciate the real conditions. Recently another case came under his observation, that of a young woman with a history simulating that of sarcoma. Two competent men pronounced the material sarcomatous. Dr. Stone removed the uterus and a third pathologist declared the condition to be a chorioepithelioma.

DR. L. H. BRANSON, Iowa City, Iowa, stated that she was led into comparatively close study of this subject by microscopic findings. She has always made it a point of bringing in the microscope to confirm the macroscopic findings in her diagnoses.

Cheyne-Stokes Respiration in Nephritis.—C. G. Cumston, in the *American Journal of Urology*, states that certain nephritides offer lesions of cardiac and arterial insufficiency associated with impermeability of the kidney coinciding with periodical dyspnea, and it is hardly possible in these cases to define exactly how much is due to these two factors, viz., renal insufficiency and cardiovascular lesions in the production of Cheyne-Stokes respiration. Cheyne-Stokes respiration during the progress of a nephritis, he says, does not necessarily coincide with renal insufficiency, but it always does with cardiovascular lesions, and a large number of clinical observations confirm this rule. Most frequently the physician is apt to overlook lesions less evident than the renal changes, but which are quite as real and are always found when the Cheyne-Stokes phenomenon is present. Renal insufficiency may certainly exist, but, he emphasizes, if there are other concomitant vascular or cardiac lesions, this phenomenon does not occur.

Clinical Notes

SPIROCHETES IN ACUTE LYMPHATIC LEUKEMIA AND IN CHRONIC BENIGN LYMPHOMATOSIS (HODGKIN'S DISEASE).

SECOND COMMUNICATION.

WILLIAM CHARLES WHITE, M.D.
Chief Physician, Tuberculosis Hospital.
AND
F. PRÖSCHER, M.D.
Pathologist, Allegheny Hospital.
PITTSBURG, PA.

In connection with a former communication[1] on spirochetes in Hodgkin's disease, we wish to report two further cases in which spirochetes were found during life.

CASE 1.—*History.*—The first case presented the picture of acute lymphatic leukemia. The patient had been sick about six weeks. He entered the hospital Wednesday, August 28, and was seen by Dr. Pröscher in the hospital on the morning of this day.

Examination.—On examination he appeared very anemic and cachectic. The lymph glands over the whole body were swollen, soft and discrete. The lymph glands in the inguinal and crural region were the most enlarged, but those in the cervical and axillary regions were also very large and easily palpable. Glands behind the ear and in the cubital region were enlarged also and distinctly felt. The patient had had profuse hemorrhages from the mouth for five weeks. He had been always healthy up to six weeks before admission. There was absolutely no trace of luetic infection to be found and no history of such infection could be elicited.

The blood examination showed: Red blood corpuscles, 900,000; leucocytes, 32,000; hemoglobin, 14 per cent. The blood smears showed only large and small lymphocytes, very few polymorphonuclear leucocytes, a few poikilocytes and normoblasts.

Dr. Pröscher found in the smears made from the fluid obtained by aspiration of the lymph glands large numbers of spirochetes. These organisms averaged about 20 microns long, the curves of their body were shallow and few in number. The body was slender, and both ends of the organism pointed.

A gland was extirpated and: First. In the exudation from this gland spirochetes with very poor motility were seen with great difficulty. Second. In frozen sections stained by Levaditi's last pyridin silver method, innumerable spirochetes were found. Third. In smears made from the exudation from this gland stained by a special method (Pröscher), which we will describe later, very great numbers of spirochetes were found.

CASE 2. *History.*—The second case presented the picture of chronic lymphomatosis (Hodgkin's disease). The patient had been sick about three years.

Examination.—The blood picture was normal. One year previously the red blood corpuscles numbered 5,000,000; leucocytes, 6,000; hemoglobin, 80 per cent.

The glands in cervical axillary and inguinal regions were considerably enlarged and readily palpable. One gland, extirpated one year ago by Dr. Pröscher, showed only the lesions of chronic lymphatic hyperplasia. In this patient three different glands were aspirated. In the smears from the fluid obtained in this way we found in each instance large numbers of spirochetes, which corresponded with the organism described in the former case. On aspiration, two of the glands furnished small particles of cheesy-looking material. Smears from this were made and stained for tubercle bacilli and spirochetes. No tubercle bacilli were found. The cheesy material was a solid mass of spirochetes.

In a later communication we will furnish a complete record of our findings in these cases, with six additional cases which we have now under examination, together with our conclusions concerning this class of blood diseases.

NOTE.—Since the writing of this paper the patient in Case 1 (the acute case) has died. It was absolutely impossible to obtain an autopsy, which would have helped us to determine: First, whether this was a pure lymphatic infection or whether the bone marrow was also involved; secondly, something of the port of entry of the organism.

1. THE JOURNAL A. M. A., August 31, 1907.

AN INTERESTING CASE OF INCONTINENCE OF FECES IN AN UNDERSIZED BOY OF SIX YEARS.*

MAURICE OSTHEIMER, A.B., M.D.
Senior Instructor in Pediatrics, University of Pennsylvania.
PHILADELPHIA.

When, two years ago, three boys with incontinence of both urine and feces were brought to the Children's Dispensary, University Hospital, inside of three months, I reviewed the literature[1] on incontinence of feces in childhood and could find altogether only twelve cases in children over three years of age. Another recent review of the literature from 1904 to the present time failed to reveal any more cases of this condition.

Patient.—In February, 1907, a very small, rather stout, ruddy-cheeked boy of six years was brought to me with this history:

History.—His parents, who are well, are both short and stout. The father is a motorman. John is the fourth child, born after a protracted labor, without instruments, however. He was a large, well-developed baby at birth and had never been seriously ill. He was breast-fed until nine months of age, was then weaned, and given table food soon afterward. His teeth appeared regularly and he grew normally until four years old.

Two years ago, however, without any general or local cause which the parents could discover then or can think of now, the boy began to lose control of his bowel movements. He did not appear to be nervous; his appetite seemed normal; he ran about like other boys of four years. He had had no illness, nor had he been kept housed up during the winter. His diet had been that of the other older children, including many fried things, much tea and coffee. He was not constipated, but had a tendency to diarrhea at times. Nor had he ever had enuresis. The three older children, though uniformly small, all kept well, and John alone developed incontinence of feces.

The incontinence recurred with constantly increasing frequency until a day rarely passed without its happening once at least, and sometimes he would soil his clothing as often as six times in twenty-four hours. He has been and still is bright mentally and physically active, though his mother has not sent him to school yet on account of the incontinence. Like his sisters, who also are small for their ages, John has a slight defect in his speech, which, his mother says, all of her children have had, but they outgrow it as they grow older.

Examination.—John is 41 inches high and has been just that high for the past eighteen months. His physical development otherwise is excellent. There are no adenoids, though his tonsils are slightly hypertrophied. The circumference of his head is 19½ inches; that of his chest is 22 inches. He weighs 41 pounds. His thoracic and abdominal viscera show nothing abnormal. Rectal examination revealed a sphincter which was apparently securely closed, and this could be palpated well by introducing the finger into the rectum.

* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Maurice Ostheimer, "Incontinence of Feces in Children," University of Pennsylvania Medical Bulletin," February, 1905.

Treatment.—His mother tried many drugs and electricity without any good result. She assured me that she would cooperate to the best of her ability in any treatment I should suggest. With her I went over his diet very carefully, excluding tea and coffee, all fried food, fresh bread, cake and pastry, and all eating between meals. A cold sponge-bath was advised daily on rising in the morning, to last two or three minutes, followed by a good rubbing with a rough towel. The child was to be kept out in the air as much as was possible, and pills of strychnin, 1/60 of a grain each, were ordered three times a day after meals.

In spite of his mother's assurances, John objected to the cold sponge-baths, and his mother began to omit them inside of a week. Incontinence of feces was noted once on the day after treatment was begun, and then not again for five weeks, during which time his pills were taken somewhat irregularly, and he got about one sponge-bath a week. Then his mother was unable to return to the hospital, so that two weeks passed without any medicine at all, during which time the incontinence recurred three times. At her next visit I insisted on a more rigid treatment, which was at once begun, with such good effect that the incontinence has not reappeared since, a period of eight weeks now. John is still under treatment, taking the pills regularly, though only getting two cold sponge-baths each week.

The following table of statistics shows that the above patient is both below the normal height and weight for his age, six years. He shows no deformities or malformations, omitting his slight speech defect.

	Height. Inches.	Weight. Pounds.	Circumference of chest. Inches.	Circumference of head. Inches.
John	41	41	22	19½
Normal—Rotch[2]	43.75	45.07	21.75	20.50
Normal—MacDonald[3]	44.64	45.01	.....	20.51
Normal—Holt[4]	44.10	45.10	23.20	.....
Normal—Griffith[5]	43	44	.....	.....

There seems little doubt that incontinence of feces, in such cases, will recur soon after treatment is stopped, unless the treatment, rigidly carried out, extends over three months or longer. In this connection I might refer to the first case which I reported[1] in 1904, also in a boy of six years, in whom treatment was continued irregularly for several months, with apparent recovery. But five months later, after an attack of diarrhea following the ingestion of unripe fruit, the incontinence of feces recurred. The boy was left without treatment for the past two years, until I looked him up three months ago. I persuaded his mother to begin treatment again, and the child, now a big boy of nine years, is trying hard to overcome the condition, of which he is thoroughly ashamed. He is taking strychnin, cold sponge-baths daily and practically lives out of doors. Besides, he will soon begin to take swimming lessons daily.

Fresh air, cold water and strychnin all seem to act by raising the lowered tone of the rectal muscles. I wish to lay stress on the fact that the treatment of this condition, which fortunately is rare, should be instituted early, carried out regularly and continued as long as possible, in order to prevent recurrence of the incontinence.

Since reading this report two cases of incontinence of the feces have been reported by C. G. Kerley in his new book on the "Treatment of Diseases of Children." An interesting review of the treatment of the conditions, by G. F. Still, appeared in the *London Clinical Journal*, April 24, 1907.

The incontinence has not recurred in either of these cases since June, 1907.

2. T. M. Rotch, "Pediatrics," 1901, pages 45 and 81.
3. MacDonald, quoted by H. Koplik, "Diseases of Infancy and Childhood," 1902, page 56.
4. L. E. Holt, "Diseases of Infancy and Childhood," 1897, page 20.
5. J. P. Crozer Griffith, "Care of the Baby," 1903, page 53.

DISCUSSION.

DR. A. W. FAIRBANKS, Boston, thought that most of the cases of incontinence developing after control has once been established are really due to lack of mental control. In many of these cases the child has some anatomic or physiologic defect in other respects, or the other children in the family, or parents, may be defective in some way. Some of the children show no visible mental defect, but it is nearly always a matter of mental control. The earlier in the life of the child the incontinence occurs, after control has already attained, the less, as a rule, will be the outward evidence of slightly defective mental stamina. The later its onset in childhood, the more noticeable is likely to be some evidence in other ways of deficient cerebral capacity. In other words, the longer control has been established, the greater must be the temporary lapse of cerebral power, causing the incontinence. Incontinence, therefore, is not likely, in the absence of disease, to occur in later childhood, except in those children who show in other ways well-marked defective cerebral function.

CONCRETION IN LUSCHKA'S TONSIL.

JAMES H. MORROWAY, M.D.
RIDGEWAY, MO.

The following case is of interest from its rarity. I have been unable to find a report of a similar case in the available literature. It is further of interest from the symptoms, which resembled those of hay fever:

Patient.—A. B., male, aged 28, has always had trouble with his throat and nose, but otherwise presents no clinical history of importance. He at first appeared to be a victim of hay fever, although there was no sneezing at the moment. The face presented a vacuous expression; nose was long and narrow, giving a pinched expression. The alæ moved feebly, and considerable thin discharge flowed from the nostrils. The mouth was open to aid breathing, and there were fetor of the breath and painful deglutition. Deafness was also present.

Examination.—Anterior rhinoscopy showed the picture of trophic rhinitis: crusts and scabs, showing shallow ulcerations underneath when they were lifted by the probe. Inspection of the mouth revealed a high palatine vault, moderate hypertrophy of the faucial tonsils and pharyngitis. Posterior rhinoscopy showed a few adenoid plicæ surrounding a centrally located, greatly hypertrophied single growth, presumably the pharyngeal tonsil of Luschka's gland. The latter was onion-shaped, with a few crypts showing inspissated yellowish secretion and one rather large crypt at the most dependent portion. Uniform redness was everywhere seen.

Diagnosis.—A cystic degeneration or abscess of the third tonsil.

Treatment.—As the patient refused curettage, he was given iodin as an alterative. Appreciable relief as to ability to swallow was experienced in twelve hours. The patient was beginning to show signs of iodism and commenced to hawk and spit, when an object was felt to drop into the throat. This seemed to be a rhinolith. Inspection showed that the concretion came from the center of the enlarged tonsil, which now had a shrunk, baggy appearance and was discharging blood and pus. Improvement soon became manifest and has continued under the use of douches, etc.

The concretion had a somewhat cretaceous character, but was much harder.

The patient lives in what was evidently the bed of an ancient river, and the drinking water of the region is hard. I removed some renal calculi from a woman living half a mile south of him, and half a mile from her lived a patient on whose parotid gland I operated for calculus. These facts seem to lend some support to the theory that the calcium in the drinking water has something to do with the etiology of such calcareous deposits.

New and Non-Official Remedies

THE FOLLOWING ARTICLES HAVE BEEN TENTATIVELY ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR INCLUSION IN THE PROPOSED ANNUAL, "NEW AND NON-OFFICIAL REMEDIES." THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT, BUT TO SOME EXTENT ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE FINAL ACCEPTANCE AND PUBLICATION IN BOOK FORM.

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT SO FAR AS KNOWN IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

(A list of all accepted articles is published on one of the advertising pages of The Journal in the first issue of each month.)

(Continued from page 1029.)

ERPIOL—DR. SHRADER.

Capsules stated to contain, in each: Apiol, green (see Oleoresin of Parsley Seed), 0.31 Cc. (5 minims), Ergotin, Bonjean's process, 0.065 Gm. (1 grain), Gosspyin, resinoid, 0.195 Gm. (3 grains).

Actions and Uses.—It is to be used in the treatment of dysmenorrhea and amenorrhea.

Dosage.—One or two capsules three times daily.

Prepared by the Wm. S. Merrell Chemical Co., Cincinnati, Ohio. Not patented or trademarked.

GLYCEROLE TRYPSIN—ARMOUR.

Glycerole trypsin is a 70 per cent. glycerin solution containing approximately 5 per cent. of trypsin powder.

Glycerole trypsin-Armour is prepared directly from the fresh pancreas of the hog.

It is a yellowish to brownish clear liquid of sweetish taste and peculiar characteristic odor. Its incompatibilities are the same as those of trypsin. It should be kept in a cool place.

The strength of glycerole trypsin is tested in the same way as that of trypsin, using 3 to 5 Cc. of glycerole trypsin for 10 Gm. of moist blood fibrin.

Actions and Uses.—It is intended for internal and hypodermic use in the treatment of cancer.

Dosage.—Internally 4 to 8 Cc. (1 to 2 fluidrams) three times daily. Hypodermically 0.3 Cc. (5 minims) every other day, gradually increased, depending on the patient. This dose should be diluted with two or three volumes of sterile normal salt solution, using aseptic precautions and employing some local anesthetic.

Manufactured by Armour & Co., Chicago.

KELENE.

A name applied to Æthylis Chloridum, U. S. P., supplied in a special form of container.

Manufactured by Fries Bros., New York.

MERCURAN.

Mercuran is stated to be a 50 per cent. mercurial ointment in which the benzoinated lard of the official ointment (Unguentum Hydrargyri U. S. P.) has been replaced by goose fat stearin. It is supplied in capsules containing about 4 Gm. (60 grains) each.

Manufactured by the Wm. S. Merrell Chemical Co. for the Eusoma Pharmaceutical Co., Cincinnati, Ohio. Not patented or trademarked.

SILVER CITRATE.

Silver citrate, $Ag_3C_6H_5O_7$, is the normal silver salt of citric acid.

Solution of citric acid is neutralized with sodium carbonate and the solution of silver nitrate added with constant stirring. The precipitate is allowed to subside, washed with water, and dried on porous plates. The entire operation must be conducted under protection from the light.

Silver citrate forms a white, odorless, heavy powder which is moderately sensitive to the light. It dissolves in 3,800 parts of water. On heating to redness a residue of metallic silver remains weighing 63.16 per cent. of the original salt.

It should be carefully protected from the light.

Actions and Uses.—Silver citrate is a non-irritating antiseptic.

It is said to be useful in the treatment of wounds, ulcers, gonorrhea and other affections of the mucous membranes.

Dosage.—It may be applied in substance to wounds. Solutions of from 1 to 4,000 to 1 to 10,000 are recommended for injection into the body cavities, the urethra, etc.

SILVER LACTATE.

Silver lactate, $Ag.C_3H_5O_3 + H_2O$, is the normal silver salt of lactic acid.

It is prepared by dissolving freshly precipitated silver carbonate in a solution of lactic acid by the aid of heat and concentrating the solution until crystallization begins. The operation must be conducted in a darkened room.

Silver lactate forms colorless crystalline needles, turning brown on exposure to light; it dissolves in 15 parts of water. On heating it leaves a residue of metallic silver weighing 50.2 per cent. It is usually colored somewhat brown and gives with water a brownish or reddish solution. The salt must be protected from the light.

Actions and Uses.—The 1 to 300 to 1 to 500 aqueous solution is said to be equal in disinfecting power to a 1 to 1000 solution of mercuric chloride. It is irritating if applied in substance to wounds.

It is recommended for all purposes for which a powerful antiseptic is desired.

Dosage.—1 to 100 to 1 to 2,000 solutions.

TRYPSIN—ARMOUR.

Trypsin is the proteolytic ferment of the pancreas.

Trypsin-Armour is prepared from the fresh pancreas of hogs with the view of retaining the proteolytic ferment in an especially active condition. It has been activated by enterokinase.

It is a light yellow powder, possessing a faint odor and a meat-like taste. It is not completely soluble in water at once, but dissolves almost entirely in time. It is insoluble in alcohol and ether. Free acids (in more than traces), pepsin and large amounts of alkalies are incompatible. Solutions of trypsin should not be exposed to a temperature above 40.6 degrees C. (105 degrees F.).

The proteolytic power of trypsin is determined by digesting ten grams of fresh moist blood fibrin in 50 Cc. of solution of sodium carbonate, 0.4 per cent., to which has been added 0.150 to 0.300 Gm. of the trypsin powder, maintaining the mixture at 40 degrees C. (104 degrees F.) for one hour, and shaking by rotation every ten minutes. The fibrin used is washed free from blood with cold water and then chopped, using an Enterprise meat chopper with plate having 5/64 inch perforations. The hashed fibrin is pressed lightly in a cloth, mixed, and is then ready for use. The residue left after one hour's digestion is compared with the amount left by employing a standard sample of trypsin powder under exactly the same conditions at the same time.

Actions and Uses.—Trypsin has the power of digesting proteid materials; it acts best at 40 degrees C. (104 degrees F.) and in a slightly alkaline medium.

When applied locally in solutions made alkaline by sodium carbonate, it dissolves diphtheritic and other false membranes. It is claimed to have the power of destroying the cells of cancer without acting on the healthy tissue. When taken internally in combination with ox-gall, it is said to improve the condition of cancer patients.

Dosage.—Trypsin is applied locally by means of a brush or as a spray. About 0.4 Gm. (6 grains) are mixed with 0.13 Gm. (2 grains) sodium bicarbonate and triturated in a mortar while adding 1 or 2 drams of distilled water, then warmed to 38 to 40.6 degrees C. (100 to 105 degrees F.) and applied immediately. The application may be repeated several times an hour if necessary, a fresh solution being made before each application. The internal dose is 0.13 Gm. (2 grains) or more three times daily. It should not be used for hypodermic injection.

Manufactured by Armour & Co., Chicago.

(To be continued.)

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[*For other information see second page following reading matter.*]

SATURDAY, SEPTEMBER 28, 1907.

THE ROYAL COMMISSION ON NOSTRUMS.

Some three years ago we commented[1] on the report of the royal commission, established in 1903 to investigate the causes of the steady decline in the birth rate in New South Wales. As will be remembered, the commission in its conclusions gave as one of the causes of lowered birth rate the use of noxious "patent medicines," of late years increasingly prevalent through unscrupulous advertising, and it was recommended that a separate commission be appointed to pursue the line of investigation thus indicated. This recommendation was adopted and a commission appointed, its functions, however, being broadened to an inquiry into the manufacture, sale, advertising and prevalent use of alleged remedial agents of secret composition, the effects of their use and the legislation in regard thereto in various parts of the world.

We have just received from Australia the report[2] of this later commission, appointed Dec. 11, 1906, under the authority of the Australian Commonwealth, in accordance with the recommendation of its predecessor. This remarkable official document consists of a folio volume of 455 pages, containing the most exhaustive arraignment of the nefarious traffic in measures for the prevention of conception and for abortion and in secret nostrums both for the laity and the profession, either dangerous or fraudulent or both, that has hitherto appeared. The report is, of course, largely a compilation, but it is a compilation that collects and lays bare officially all that has been done in this direction, and adds much important material gathered by the commissioner in the course of his widely extended investigations. These investigations included a personal examination of the conditions and the efforts made to cope with them in the United States, and particularly in Washington, D. C., San Francisco, Chicago, New York and Boston; in Canada, England, Berlin, Saxony (as representative of the component German states) and France.

The report is divided into six parts: (1) Prevention of conception and feticide, (2) infanticide, (3) injury and death to the adolescent, (4) injury and death to adults, (5) advertisements, and (6) legislation.

"It is hoped," says the report, "that by contemplating one after another the various provinces of the inquiry under what may be called natural classification, legislators and other readers will be able to form a more permanent impression of the multifarious evils of the traffic in secret drugs. *The principle of deception has come to be recognized as an unwritten law, a prescriptive right, a sanction by long continued though not immemorial custom.*" (Italics ours.)

It is a common subterfuge on the part of manufacturers affected by an analytical exposure of their products, to take refuge under a flat denial of the accuracy of the analysis, thus clouding the issue, cuttlefish-like, by a conflict of evidence. This being the case, it becomes a duty to weigh the character of the evidence and of the witnesses on either side, and on this point the words of the commissioner are well worth noting. He says: "Particular attention is drawn to the complete liberty of the packers of secret drugs, wrongly called 'patent,' to vary the ingredients and the proportions of them while using the name, description and testimonials attached to the nostrums. Therefore, mere contradiction by the vendors, of the authoritative analysis, or variation of the analyses themselves, is not to be accepted as evidence of inaccuracy on the part of the analysts. Personal contact with these eminent men in the countries visited, together with personal inspection of their systems, practice and results justifies your commissioner in claiming preference for their authoritative statements, made in the interests of society at large, over *ex parte* declarations."

The fundamental principles in the domain of public health established as essential to a remedying of the conditions are laid down by the commissioner as: (1) prohibition of secrecy, (2) punishment of deception, and (3) responsibility both of the publisher and of the vendor.

The Council on Pharmacy and Chemistry has been criticised for the stringency of its requirements in the endeavor to establish a standard of moderate honesty to which all privately owned remedies that aspire to any official recognition at the hands of the medical profession shall conform; yet these requirements are lenient, indeed, when compared with those laid down as absolutely essential to check the waste of health and life and the physical and moral deterioration of the race, by an independent commissioner—not a member of the medical profession and, therefore, not to be charged, as we of that profession are sometimes charged, with being possessed by impossible professional prejudice—appointed by an enlightened government to make an "authentic and authoritative investigation into the subject from a point of view that may be called international." These recommendations include among others the pub-

1. THE JOURNAL A. M. A., Oct. 15, 1904.

2. Commonwealth of Australia: Royal Commission on Secret Drugs, Cures and Foods: Report, together with Copy of Commission, Diagrams, and Fac-simile copies of Advertisements. Vol. I. 1907.

lication, with every sale, of a complete qualitative and quantitative formula in official nomenclature; no advertisement, testimonial or award of merit to be permitted on the article or its container; the absolute prohibition of advertisements of secret remedies by newspapers, posters, etc.; refusal of mail privileges to newspapers, books, etc., containing such advertisements; compulsory registration of every proprietary name, but no right in any invented name, whether descriptive, fanciful, or other, to be allowed in respect of any chemical, pharmaceutical, organic or bacterial preparation, or single or compound substance for external, internal, subcutaneous or intravenous use, in the prevention, alleviation or cure of human disorders or injuries of any kind.

The perusal of the vast accumulation of evidence contained in this report impresses on us two things: First, the significance of the undertaking of such an investigation by a government, of its own proper motion and without pressure, and regardless of the antagonisms such a course must necessarily arouse among those whose "vested interests" are thus threatened; and, second, a sense of humiliation that such an independent, first-hand and exhaustive investigation should lead, and we cannot deny justly lead, to the statement that "many or most of these swindles, together with the traffic in private letters of patients, are American." This statement is amply borne out in page after page of the facts adduced.

In the German Confederation, in Sweden, Norway, Denmark, Italy and other countries the principle is fully recognized that the interests of society demand the publication of any real prophylactic remedy, or palliative for any of the ills to which flesh is heir, and this principle is conscientiously enforced in these countries by federal, state, municipal and parochial authorities, supported by the judiciary.

In the Anglo-Saxon nations, on the other hand, the principle is acknowledged only by the medical profession, and can be enforced by them only on the voluntary associations of their own members; while the legislature in Great Britain, Canada and Australasia, and until recently, and even yet in some part, the United States, sanctions, and the judiciary consequently enforces, an entirely opposite principle, viz., the right, without control or supervision, to sell under any representation, true or false, as cures for all or any ills any drugs, however noxious or however inert. It will thus be clear that the Anglo-Saxon countries are the principal victims of this nefarious traffic, while the United States is the chief offender, as well as the greatest victim of them all.

We hope, though from past experience we hardly dare to do so, that this evil, now that it is officially pilloried for public execration, will receive that attention at the hands of the public press that the exposures and denunciations of the medical profession have hitherto failed to secure for it.

OPHTHALMO-TOXIC REACTIONS.

The phenomenon of a local reaction in the subject of an infectious disease on the injection of the corresponding toxin, and its application by von Pirquet in eliciting a cutaneous reaction in tuberculosis were commented on some weeks ago.[1] A distinct advance in the method of utilization of this principle in diagnosis was made when Calmette[2] showed that if tuberculin were instilled into the eye there would be a marked congestive reaction in the case of tuberculous patients, while the healthy or non-tuberculous responded with a very much milder reaction. Calmette makes use of a 1 per cent. aqueous solution of the precipitate obtained on the addition of alcohol to tuberculin. Within three or four hours after the instillation of one drop of this solution a marked congestion of the palpebral conjunctiva is noted in the tuberculous subject. The caruncle becomes swollen, red and covered with a light fibrinous exudate. In the course of about six hours this serofibrinous exudate will be found abundantly in the inferior cul-de-sac. The reaction reaches its maximum in from six to ten hours and disappears after eighteen hours in children and after from twenty-four to thirty-six hours in adults. No constitutional disturbance accompanies the mild conjunctivitis thus set up. The reaction is practically painless and the technic is a matter of the utmost simplicity.

Chantemesse, working along the same line, reported at a recent session of the Paris Academy of Medicine (July 23, 1907) that he had successfully applied the same method to typhoid fever and that the reaction thus obtained is a very reliable and early sign. Chantemesse obtains his typhotoxin by precipitation with absolute alcohol from cultures of the *B. typhosus*. This precipitate is powdered and used in aqueous solution, one-fiftieth of a milligram being the amount he uses for a test. The eye of a typhoid patient or convalescent will exhibit a marked and lasting reaction. As in the ophthalmo-tuberculin reaction, there will be noted congestion, lachrymation and a serofibrinous exudate. This reaches its height in from six to twelve hours and is always noticeable for at least twenty-four hours, sometimes, indeed, for two or three days. In individuals who have not typhoid fever there will be seen a moderate congestion and lachrymation, usually disappearing in the course of four or five hours and never seen after twenty-four hours. It is not yet known just how early in the disease this sign may be elicited. Chantemesse has shown, however, that in rabbits it may be brought out forty-eight hours after the subcutaneous injection of typhoid cultures. The normal rabbit does not respond to any greater extent than does the human subject who is not infected with typhoid.

The test is accompanied with very little discomfort, and if further investigations uphold its reliability it should prove a valuable sign. The work so far done with the ophthalmo-typhoid reaction seems to indicate that it may be elicited somewhat earlier than the Widal re-

1. THE JOURNAL A. M. A., July 27, 1907, p. 331.
2. Comptes rendus de l'Académie des Sciences, June 17, 1907.

action, and it is a very much simpler procedure than the taking of a blood culture. A further study of the specificity of this reaction and comparison with the reactions obtained with the toxins of different strains of paratyphoid organisms would be of much interest.

IRON AS A THERAPEUTIC AGENT.

Because of the flat contradiction which existed between the results obtained by the clinicians in actual practice and the more or less hypothetical conclusions of the physiologic chemists and experimental pharmacologists, the question of the utilization by man of inorganic iron given by mouth in the construction of hemoglobin has been the subject of zealous and often bitter strife. Although the practicing physician knew well through abundant experience that administration of inorganic compounds of iron had an almost specific effect in increasing the amount of hemoglobin of chlorotic patients, yet many physiologic chemists were not ready to accept this fact at its face value. Appreciating the limited power of the animal organism to synthesize complex substances from simple ones, they could not imagine that iron in simple inorganic forms given by mouth could be built into the enormous hemoglobin molecule. On the other hand, since they knew that in the development of the chick from the egg the hemoglobin is formed from complex protein-iron compounds, and that the only iron received by the suckling mammal is in a similarly complex combination, they were led to believe that the adult animal can utilize only the same sort of iron compounds. In further support of this theory they cited the fact that the iron of the food, from which hemoglobin iron must be derived under natural conditions, is entirely in complex compounds, and, as a clinching argument, showed that when inorganic iron is given in the food it can all, apparently, be recovered in the feces. Supported by this evidence, they denied the possibility that inorganic iron could be utilized for hematogenesis, scoffed at the lowly Blaud's pill, and gave ground for the introduction into commerce of as many compounds or supposed compounds of "organic" iron in "assimilable" forms as could be fitted with striking copyrighted titles.[1]

As is well known, one of the chief opponents of the view that inorganic iron is absorbed directly was the Swiss physiologist, Bunge, and his explanation of the action of inorganic iron in chlorosis is to be found in every text-book—namely, that inorganic iron merely combines sulphids or similar products of intestinal putrefaction, which otherwise would combine with the assimilable protein compounds of iron and prevent their passage through the intestinal wall. This hypothesis met with vigorous opposition, and it was soon shown that there is no good reason for believing that there is any unusual formation of sulphids or other iron precipitants in the intestine in chlorosis. Furthermore, the substitution for iron of other precipitants of sulphids, such as bismuth or manganese, does not have the same effect on the hemoglobin in chlorosis as does iron.

In the controversy that has been waged over this and other features of iron absorption an enormous literature has been produced, which has recently been critically reviewed and abstracted by Erich Meyer[2] in a lengthy résumé. The evidence collected in this paper seems sufficient to settle beyond reasonable doubt that inorganic iron can be and is absorbed from the intestine, and utilized in the formation of hemoglobin, when given in the usual medicinal doses. In the first place it has been repeatedly shown by different experimenters that the organs of animals that have been fed inorganic iron preparations regularly contain more iron than the corresponding organs of control animals. The liver is the great storehouse for iron, and apparently the hemoglobin of the blood is largely formed from iron which has been stored in this organ as ferratin. It would seem that no matter in what form iron is given it is first taken to the liver, and perhaps also to other storehouses, where it is held until needed for the formation of hemoglobin; therefore, after hemorrhages the iron reserve in the liver is rapidly depleted. When animals are kept on a diet very poor in natural forms of iron, and bled at frequent intervals, the amount of hepatic iron is rapidly reduced to a very small fraction of the normal amount, and the animal soon ceases to replace the lost hemoglobin. But control animals given the same diet, to which has been added iron in any of the usual forms used in therapeutics, no matter whether organic or inorganic, suffer much less loss of hepatic iron and replace the lost hemoglobin completely if the bleedings are not too frequent or too severe. It is probable that no matter how the iron is combined when it enters the stomach, it is not used directly for the formation of hemoglobin, but is always first converted into the ferratin of the liver, which constitutes an intermediate step in the conversion of food iron into hemoglobin, thus ensuring a constant material for the formation of hemoglobin irrespective of the sort of iron compound obtained by the animal in its food. This view has been urged by Meltzer[3] in a recent article.

Studies by microchemical methods of the absorption of iron through the walls of the gastrointestinal tract indicate also that direct absorption of iron does occur, and the paths of absorption seem to be much the same whether the iron is taken as complex organic or as simple inorganic compounds. The greater part is absorbed in the duodenum, although if refractory forms are given it may also be absorbed lower down in the small intestine, and probably enters the blood rather than the lymph. That inorganic iron is converted into organic compounds in the liver is shown by the observation that

1. Organic Iron Preparations: New and Non-Official Remedies, 2d Ed., p. 76.

2. Ergebnisse der Physiologie, v. p. 698.

3. THE JOURNAL A. M. A., Aug. 24, 1907, p. 639.

even when dogs fed inorganic iron compounds are repeatedly bled, the iron which is found abundantly in their livers is in a form not precipitable by ammonium sulphid, which reagent precipitates inorganic iron compounds present in the body.

If we consider the elaborate mechanism by which the body reduces the manifold sorts of protein entering it as food into their constituent amino-acids, thus enabling the body to resynthesize these elementary substances into stable types of protein normal to its own composition, we find there is a good analogy for the methods adopted by the body to form hemoglobin. Hemoglobin is a very complex substance, with iron forming but a minute part of a molecule which contains also hematoporphyrin and protein, and there seem to be many sorts of hemoglobin specific for each species. The body receives iron in many different forms, and were it to build these various compounds directly into hemoglobin there could be no constancy in the composition of the resulting hemoglobin. The natural method of utilizing iron from these various sources and yet securing a constant composition for the hemoglobin would be to reduce each iron compound to some simple form, presumably inorganic, before its absorption, then to bind this into some loose but relatively constant compound, such as ferratin, and from this manufacture the hemoglobin. This being apparently the method adopted by the body, it would seem that there should be no fundamental difference whether the iron given therapeutically is in organic or inorganic form —such as reduced iron, Blaud's pills, tincture of the chlorid of iron or iron citrate, tartrate, acetate, etc.— and this perhaps may be the real reason why there exists so much honest difference among clinicians as to their choice of iron preparations.

THE ERROR OF THE VEGETABLE UNIT DESCRIPTION.

A common error of medical writers, which is by no means limited to the novice, is that of describing the size and shape of a pathologic growth or area of tissues by comparing it with some common object, a method which is a constant source of annoyance and difficulty to those who would afterward make use of their descriptions. The chief reason why this method is defective is that an object that may be common in one country may be unfamiliar in another, and also that the size of the same class of objects may be subject to great variations. For example, English writers say frequently that a lesion is the size of a horse bean; now what will that signify to an Italian student of the literature? To specify sizes by comparison to such things as a horse chestnut, a lentil, a watermelon seed, or a muskmelon is sure to give rise to international complications; and our foreign contemporaries are just as prone to these provincial comparisons as we ourselves are. In an article at hand, in German, the author refers to a "*kastaniengross*" tumor, and to another the size of an "*Apfelsine;*" now does he appreciate that to an Italian reader the word chestnut calls to mind an object several times as large as it does to an American, and how is the reader of any nationality to know whether the author refers to the Italian chestnut, which is a common article of commerce in Germany, or to the native German chestnut, which, if our remembrance is correct, is intermediate in size between the Italian and the American variety? And as for the orange-sized tumor, has our German pathologist ever seen an American navel monster, or does he know only the smaller fruit of southern Europe? Examples might be multiplied to great length, and will occur to every reader of medical literature, to whom they have probably been a source of time-consuming annoyance. When every country has some system of weights and measures, why not use it in describing objects which possess dimensions that it is desired to record? Even although the system be no better than the one in vogue in English-speaking countries, it furnishes at least a fixed unit, which does not vary according to the climate or the season, as do the vegetable units so dear to many writers.

ANTHROPOMETRY IN NATIONAL EVOLUTION.

Among the papers read at the recent meeting of the British Medical Association was one of special interest from a medical point of view by Mr. J. Gray on "Anthropometrics in Schools; the Problem of National Evolution." The gist of Mr. Gray's argument may be summed up in the statement that how best to improve the conditions of the people is a biologic rather than an economic problem. Measures for the improvement of the people in the abstract are all more or less Utopian. Great Britain, said Mr. Gray, has cheap food in consequence of its free trade; sanitary reforms have given it healthy towns; cheap locomotion has enabled the town dwellers occasionally to get away from their environment into the country, and now it has to discuss such questions as free meals for school children and the employment of the unemployed by the state—reforms directed to the benefits of particular classes. This indicates an alarming condition of deterioration that demands immediate attention, which must be directed, he thought, toward the establishment of a sound national physique, as more important than a sound national finance. Dr. F. C. Shrubsall urged the necessity of anthropometry in the schools as essential to a wide study of large factors of environment, and Sir Victor Horsley added a resolution calling on the government to undertake a system of periodical measurement of school children in connection with their medical inspection, so as to provide definite information on their physical condition and development. There is a general awakening to the fact that the school is the proper field, and must be the most fruitful one, both for investigation into human economics and for the practical application of the principles deduced therefrom.

Acquired Causes of Insanity.—Punton, in the *Kansas City Medical Index-Lancet*, states that among the more prominent direct or acquired causes of insanity are use and abuse of certain agents, such as alcohol and opium, excesses of all kinds, mental and physical strains, overstudy, excessive grief, domestic infelicity, malformations, disturbances of circulation, acute diseases, and injuries of all kinds.

Medical News

CALIFORNIA.

Personal.—Dr. Arthur A. O'Neill, temporary warden at the City and County Hospital, San Francisco, has been made permanent warden.——Dr. L. W. Burtt, Los Angeles, has left for a two years' course of study in Europe.——Dr. J. T. Kitchings, Stockton, who was suffering from mental aberration, is said to have set fire to a number of houses between Stockton and Collegeville.——Dr. George S. Harkness, Stockton, has returned home from St. Luke's Hospital greatly improved in health.——Drs. Agnes Walker and A. Wherry have been appointed assistant bacteriologists by the board of health of San Francisco.——Dr. Arthur L. Holcombe has been chosen a trustee of Compton.——Drs. Edward Topham, William H. Harrison and Tilton E. Tillman have been appointed surgeons on the San Francisco Emergency Hospital staff.——Dr. William J. Hanna, Sacramento, has been appointed director of the Soldiers' Home at Yountville.

Hospital Notes.—Articles of incorporation of the Northern California Hospital Association have been filed with the object of erecting a hospital in Eureka. The capital stock of the association is $250,000. Dr. Charles C. Falk is president, George T. Rolley vice-president, and Dr. Curtis O. Falk secretary-treasurer.——The Southern Pacific Railway Company has applied for a permit to erect a three-story steel and concrete hospital on Hayes street, San Francisco.——At a meeting of the board of regents of the University of California the president reported that a gift of $2,500 had been received from Mrs. William H. Crocker to be used for the equipment of a ward in the University Hospital, San Francisco.——The new St. Elizabeth's Hospital, Red Bluff, was formally opened September 24, with a public reception held in the grounds and building.

GEORGIA.

Medical Scholarships.—The governor has selected the following individuals for beneficiary scholarships in the Medical Department of the University of Georgia for the term of 1907-8, as provided by law:

State at Large.—Sheddie, Usher, Springfield; W. K. Smith, Pembroke; William Massey, Barwick; F. L. Lanier, Sylvania; Clarence Cox, Ellijay; D. L. Deal, Statesboro.
First District—W. H. Sutton, Swainsboro; T. B. Brantley, Sylvania.
Second District—W. D. Sloan, Milltown, J. G. Standifer, Blakely.
Third District—G. G. Lunsford, Americus; J. W. Polhill, Hawkinsville.
Fourth District—Albert Martin, Columbus.
Fifth District—Mason Smith, Douglasville; T. R. Aycock, Monroe.
Sixth District—T. F. Bradley, Bradley; G. L. Johnson, Yatesville.
Eighth District—DeWitt Payne, Fort Lamar; Fred Griffith, Eatonton.
Ninth District—Ralph Freeman, Dacula; M. B., Ketron, Clarkesville.
Tenth District—H. N. Bussey, Thomson; John A. Johnston, Augusta.
Eleventh District—W. E. Williams, Soperton; D. W. F. Maloy, Beach.

So far as THE JOURNAL is informed, Georgia is the only state in which such an arrangement exists.

ILLINOIS.

Typhoid Fever.—An epidemic of typhoid fever is reported at Canton.——As a result of drinking impure water while camping at McHenry, five citizens of Elgin are ill with typhoid.

Cost of State Charges.—The average per capita cost of inmates of the state institutions for the quarter ending June 30 was $42.68. The highest per capita was at the St. Charles Boys' School, which amounted to $73.45; the lowest was at the State Hospital for the Incurable Insane, Bartonville, with a per capita of $25.

Personal.—Dr. Cyrus H. Anderson, McLeansboro, has been appointed superintendent of the Hospital for Insane Criminals, Chester, vice Dr. Walter E. Songer, deceased.——Dr. John E. Haughey, Rockford, has succeeded Dr. Charles E. Crawford as physician of Winnebago County.——Dr. Hugh F. Gunn, Galena, has been appointed physician of Jo Daviess County.——Dr. Harry C. Blankmeyer, Springfield, bacteriologist for the State Board of Health, has resigned.——Dr. John C. Sonders has been elected physician of the poor for Rock Island.

Conference of Charities to Meet.—The Illinois State Conference of Charities will meet at Jacksonville October 9 to 11. Dr. Frank P. Norbury, Jacksonville, president of the conference, will deliver an address on "Education of Physicians and the Public Regarding Insanity;" Dr. Richard C. Cabot, Boston, will consider "The Social Aspect of Medical Work;" Dr. William H. C. Smith, Godfrey, will describe the "Work for Deficient Children in Illinois;" C. W. Hart, St. Charles, will deliver an address on "Methods of Training Children in Institutions;" Mrs. James A. Parsons, Jacksonville, will speak on "The Care of the Poor in Small Communities;" S. T. Metcalf, Buffalo, will read a paper on "Public Care of the Poor: The Modern Almshouse;" Governor Deneen will deliver an address on "The Wards of the State;" Col. Frank D. Whipp will speak on "Business Administration of Public Institutions;" Mr. Henry Wolfer will speak on "The Model Penitentiary;" F. Emory Lyon will discuss "The Needs of Jails and Lockups;" Judge McKenzie Cleland, Chicago, will consider "Adult Probation;" Prof. Charles R. Henderson will deliver an address on "Social Hygiene," and Dr. H. G. Hardt will speak on "The Continuous Care of the Feeble-Minded."

Chicago.

Personal.—Dr. and Mrs. Eugene S. Talbot returned from Europe September 21.——Dr. George Paull Marquis returned from Europe September 8.——Dr. David J. Doherty, Manila, P. I., is in Chicago for a brief visit.——Dr. and Mrs. Glenn M. Hammon have returned after three months in Alaska.——Dr. Harry H. Rittenhouse is reported to be critically ill.——Dr. L. Harrison Mettler and family have returned from Mackinac Island.

Deaths of the Week.—During the week ended September 21 618 deaths were reported, 48 more than for the preceding week and 70 more than for the corresponding week of 1906, equivalent to an annual mortality of 15.29 per 1,000. Acute intestinal diseases still headed the list with 114 deaths, followed by consumption with 57, nephritis with 48, pneumonia with 42, heart disease with 41, violence, including suicide, with 34, nervous diseases with 25, cancer with 21, scarlet fever 15, typhoid fever with 14, diphtheria with 9, measles with 3, and whooping cough with 2.

MARYLAND.

College Opened.—The forty-seventh session of the Baltimore Medical College opened September 20, with an address by Dr. Charles G. Hill.

Defective Children.—As a result of the medical inspection of 60,000 pupils in the public schools of Baltimore, 17,860 were found deficient, not including 593 who had not been vaccinated. Diseases of the hair, particularly pediculosis, led the list, followed by diseases of the throat, eye, nose, mouth, general diseases, diseases of the skin, ear and mental defects.

Illegal Practitioners.—Dr. Herbert Harlan, president of the State Board of Medical Examiners, reports that a special committee of the Baltimore City Medical Society worked with the State Board, and that as a result of their efforts 11 persons were indicted in October, 1906, for practicing without registration. In March, 1907, five others were indicted. Not one of the cases has yet been tried, but one defendant pleaded guilty and paid a small fine; another was indicted and convicted of assault, the assault being a medical examination. Dr. Harlan declares the delay is in the state's attorney's office, and that proper consideration has not been given to the interests of the public and profession. The state's attorney has replied, stating that some of the cases were settled on advice of complainants and that ample reason has existed for delay in the cases delayed.

MISSOURI.

Defective School Children.—Examination of the school children of Kansas City, by city medical officers, is said to show that 67 per cent. are affected with some contagious disease or abnormality. Of the pupils, 40 per cent. have weak or defective eyes, 25 per cent. have throat diseases, and 5 or 10 per cent. have defective hearing.

Hospital Notes.—The addition to the Emmaus Home for Epileptics and Feeble-minded at St. Charles, was formally opened September 15. In July there were 84 patients in the institution.——The Dr. C. R. Woodson Sanitarium Company, St. Joseph, capitalized at $15,000, has been incorporated "to furnish, maintain and equip a sanitarium for the purpose of boarding, rooming, nursing and treating patients afflicted with nervous or mental diseases."

NEW YORK.

New Tuberculosis Pavilion.—A contract has been let for the erection of a pavilion for tuberculous patients at the Willard State Hospital at a cost of $15,500.

Personal.—Dr. John A. Barnette, Watertown, has returned from Europe.——Dr. John L. Heffron has been made acting dean of the College of Medicine of Syracuse University pending the election of a successor to the late Dr. Gaylord D. Clark.

——Dr. George W. Goler, health officer of Rochester, is attending the International Anti-Tuberculosis Congress in Brussels.

Diphtheria and Smallpox.—An epidemic of diphtheria is reported to be raging in the village of Natural Dam.——The diphtheria situation at Addison is now believed to be under control. One school has been closed for purposes of disinfection.——Several cases of diphtheria have appeared in Onondaga Valley and one room of the Onondaga Academy has been closed by the health authorities.——Two cases of smallpox are reported at Talcottville.

New York City.

To and From Europe.—Dr. and Mrs. Graham Lusk returned from Europe September 17.—Dr. Henry H. Morton of Brooklyn returned from Europe September 19.——Dr. James W. Markoe and Dr. and Mrs. Charles F. Chapman sailed for Europe September 21..

Alumni Association Organized.—The Alumni Association of the New York Skin and Cancer Hospital was recently organized with the following officers: President, Dr. J. Francis Aitken; vice-president, Dr. Henry H. Whitehouse; and secretary, Dr. Jerome Kingsbury, all of New York City.

Lectures on Tuberculosis.—The fifth season of popular lectures on tuberculosis has been opened by the committee on tuberculosis of the Charities Organization Society. Last year's lectures were given before fifty-nine unions, fifty-four churches, club and lodges, and it is proposed to double the number this year.

Eligible List for City Doctors.—The Municipal Civil Service Commission has established an eligible list for the medical positions under class 3, which includes police surgeon, medical officer in the fire department, coroner's physician, etc. There were 228 physicians in this examination. More than 50 per cent. of those who took the examination succeeded in passing the test, but as a rule, with very low averages.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended September 14, 365 cases of tuberculosis, with 142 deaths; 189 cases of diphtheria, with 20 deaths; 183 cases of measles, with 4 deaths; 182 cases of typhoid fever, with 18 deaths; 108 cases of scarlet fever, with 4 deaths; 11 cases of cerebrospinal meningitis, with 6 deaths; 10 cases of whooping cough, with 6 deaths; and 17 cases of varicella, a total of 1,065 cases and 200 deaths.

Nathan Straus' Work.—The fifteenth season of Nathan Straus' work in dispensing pasteurized milk has just ended. There were 2,917,336 bottles and 1,222,048 glasses of milk sold or given away this season. The new building Mr. Straus is erecting at a cost of more than $100,000 will be finished and equipped with a large pasteurization plant this winter, so as to be in full operation next spring. The totals for the fifteen years show the dispensing of 18,710,892 bottles and 10,089,674 glasses of this milk. Mr. Straus' plan has been copied in nearly 400 cities in all parts of the world.

Milk Inspectors.—George W. Wickersham, representing the Association for Improving the Condition of the Poor, brought before the Board of Estimate and Apportionment a request for an appropriation of a minimum of $50,000 or a maximum of $75,000 to provide for fifteen or twenty additional inspectors in rural communities of milk shipped to New York. This was strenuously opposed by Controller Metz, who believes that the traveling expenses would exceed the salaries. About 40,000 farms are drawn on for the city's milk supply. The matter was finally referred to the select committee.

Hospital Notes.—An appeal to the public for $750,000 for a free hospital for the treatment of communicable diseases among sailors has been made by Dr. William T. Jenkins, the president and managing director of the Merchant Marine-Hospital Service.——St. Vincent's Hospital is to be enlarged by adding two full stories to the central pavilion. It is to be fitted with a roof garden, a solarium, and an operating pavilion. The improvements are to cost $75,000.——The Italian government has subscribed $60,000 and J. Pierpont Morgan $5,000 for a new Italian Hospital to be built in Washington Square, South.

Lectures on Hygiene.—The Brooklyn Institute has affiliated with the Medical Society of the County of Kings in presenting a series of lectures on hygiene, to be given at the hall of the Institute by distinguished specialists. The list of lecturers is as follows:

October 5, "Typhoid Fever and Other Infectious Diseases: How They are Spread," Dr. Thomas Darlington, Commissioner of Health; October 13, "The Care of the Sick Room," Dr. Florence Leigh Jones; October 19, "What Surgeons Can and Can Not Do," Dr. William F. Campbell; October 27, "The Relation of Bacteria to Disease," Dr. Joshua M. Van Cott; November 2, "Tuberculosis: Its Modern Treatment," Dr. John A. McCorkle; November 10, "The Milk Supply and the Certification of Milk," Dr. Harris Moak; bacteriologist to the Milk Commission; November 16, "Patent and Proprietary Remedies"; November 24, "The Physical and Mental Development of Children," Dr. Elias H. Bartley, and November 30, "Adulteration of Food and Drugs."

Physical Welfare of School Children.—The physicians employed by the committee on physical welfare of school children report that they have examined 1,400 school children since the schools closed. The main troubles were malnutrition, enlarged glands and defective breathing. If the percentages given hold good for all the school children of this city, 48,000 suffer from malnutrition, 187,000 from enlarged glands and 230,800 from defective breathing, a total of 465,800. The object of this report is to prepare the way for the presentation of a plan to improve conditions in a rational way, and the ideas are embodied in the report as follows:

1. A thorough physical examination of all children of all schools.
2. Notification to all parents, followed when necessary by a second notice and visits to inform and persuade parents to take proper action.
3. The enforcement of the existing laws and securing proper authority, where this is now lacking, to compel parents who refuse to take necessary steps.
4. Periodic re-examination of school children during school life.
5. Physical examination of children when applying for work certificates.
6. Enforcement of health, tenement-house and child-labor laws.
7. The establishment, in connection with boards of education, of departments of school hygiene, whose duties shall be to see that school buildings are so constructed and so conducted that they can not of themselves produce or aggravate physical defects and that the school curriculum should be so devised and executed as neither to produce nor aggravate them; to study the effect of school environment—curriculum, building, home study; physical training—on the child; and to teach hygiene so that the children will themselves cultivate habits of health and see clearly the relation of health and vitality to present happiness and future efficiency.

Dangers from Dust.—Lyman A. Best, president of the Brooklyn Teachers' Association, in his last annual report gives the results of investigations made regarding contagious and infectious diseases in the public schools. Dust and feather dusters, he says, are the principal means of infection among school children. Figures are given from 1898 to 1906 inclusive, covering measles, scarlet fever and diphtheria. The schools of the city are visited every two years by an epidemic of measles, February and March being usually the record months. In January, February and March, 1898, there were 6,921 cases of measles. The number decreased during the year until in July, August and September there were only a few more than 100 cases. In 1899 there were only 2,667 cases during the first three months of the year. There was a well-developed epidemic in 1900, January showing 3,299 cases; February, 3,473, and March, 3,742. The next year there were only 421 cases in January, 640 in February and 1,256 in March. In 1902 there were 3,353 cases in January and 3,872 and 3,371 during the next two months respectively. There were only 647 cases in January of the next year, 834 in February and 1,212 the next month, but in 1904 January, February and March showed 3,460, 4,438 and 7,112, respectively. In 1905 there were only a few cases.

OKLAHOMA.

New Hospital for Oklahoma City.—The Oklahoma Baptist Memorial Hospital Association, at a recent meeting in Oklahoma City, elected Dr. H. Coulter Todd, president. The association proposes to build a fireproof three-story hospital in Oklahoma City, to cost $100,000.

Contract for Asylum Let.—The territorial board of trustees of the Fort Supply Insane Asylum has let the contract for the remodeling of the old army post at Fort Supply that it may be used as a territorial insane hospital. The contract calls for the completion of the work by November 15.

Oklahoma Court Sustains Board.—The right of the territory to revoke the licenses of practicing physicians shown to have obtained their licenses from "diploma mills" was sustained by the Oklahoma Superior Court, September 6, in an opinion on the appeal of Calvin D. Gulley vs. the territory. Gulley was granted a license to practice medicine by the territorial board of health on Feb. 11, 1902, on his sworn statement that he was a graduate of the Independent and Metropolitan Medical College of Chicago. At the trial it was demonstrated that there was no such medical college and that the institution is merely a "diploma mill," where any one may secure a medical diploma without examination, on payment of a certain fee. The supreme court holds that the district court has exclusive jurisdiction in determining the validity of medical licenses and that any license from a fraudulent medical college may be revoked.

OREGON.

Medical Building.—The Medical Building, at the corner of Park and Alder Streets, Portland, intended exclusively for physicians and dentists, will, it is announced, be ready for occupancy December 1.

Hospital Notes.—The Dominican Sisters have purchased a ten-acre tract at Ontario on which to erect a hospital and sisters' school, at a cost of $25,000.——Dr. R. D. Cashatt, Weston, has sold his sanitarium at that place to Dr. Seymour L. Corpe, Cove.

Personal.—Dr. Esther C. Pohl has been elected city health officer of Portland, vice Dr. Wheeler, resigned.——Dr. Mary B. Thompson, a pioneer practitioner of Portland, was thrown from a street car August 13, and seriously injured.——Dr. Andrew C. Smith, Portland, was thrown from his horse while hunting in Crook County, central Oregon, and suffered a dislocation of the right ankle.

PENNSYLVANIA.

Philadelphia.

New Home for College of Physicians.—It has been stated that before the first of the year work will begin on the new building for the College of Physicians, which has been described and pictured in these columns.

Personal.—Dr. Stillwell C. Burns sailed for Europe September 19.——Dr. Carl D. Cramp, late instructor in nervous diseases at the University of Pennsylvania, has been appointed professor of neurology in the University of Michigan, Ann Arbor, and left for his new field of duty September 18.

Typhoid in Orphanage.—Fifteen cases of typhoid fever have been reported in the Bethsaida Christian Children's Home. The typhoid epidemic in the orphanage seems to be limited to the boys' building, and thus far the source of the infection has not been determined. Every precaution is being taken to prevent the spread of the disease.

Insane Ignored.—The action of the Council finance committee in decreasing the apportionment absolutely required for the improvement in the conditions of the city's indigent insane is greatly deplored by those interested in the welfare of these individuals. The failure to provide a building for the city's insane on the Byberry farm it is expected will be one of the points to be attacked in Councils when the loan bill ordinance is considered. The insane department of Blockley has been over-crowded for years, and it has been declared by municipal authorities that the increased inability to care for the insane patients at Blockley is a disgrace.

Hospital Improvements.—A contract has been awarded for the completion of the interior work on the Garretson Hospital. The superstructure of this institution was completed two years ago, but the interior finishings were delayed, awaiting an appropriation from the legislature. This money is now available and work will be pushed to completion. The cost will be $22,000.——Plans have been completed for the erection of a hospital for the Woman's Medical College, and the designs submitted to the Bureau of Building Inspection call for a 6-story brick, stone and terra cotta hospital building. This institution will be erected on the lower side of College Avenue, near Twenty-second street, and will be known as the Woman's Medical College Hospital of Pennsylvania. It will be used by the Woman's Medical College as one of its teaching departments.

Health Report.—The number of deaths reported for the week ended September 21 aggregated 451, a decrease of 6 from the number reported for the preceding week, and an increase of 29 over the number reported for the corresponding week of last year. The principal causes of death were: Typhoid fever, 11; whooping cough, 4; diphtheria, 7; tuberculosis, 49; cancer, 20; lead poisoning, 6; apoplexy, 11; paralysis, 5; endocarditis, 12; heart disease, 33; acute respiratory diseases, 34; enteritis, 60; diseases of liver, 8; diseases of stomach, 5; diseases of intestines, 9; appendicitis, 7; acute nephritis, 5; Bright's disease, 38; hydrocephalus, 5; premature birth, 10; congenital debility, 13; old age, 5; accidents and injuries, 26; and marasmus, 14. There were 149 cases of contagious disease reported, with 19 deaths, as compared with 146 cases and 18 deaths for the preceding week.

SOUTH CAROLINA.

Medical College to Open.—The annual session of the Medical College of the State of South Carolina, Charleston, opens October 2. Indications are that an unusually large number of students will be enrolled. Dr. W. H. Zeigler has been elected instructor in practical pharmacy.

Personal.—Dr. Junius L. Mann, Branchville, was operated on recently at the Knowlton Infirmary, Columbia, for appendicitis and is making a good recovery.——Dr. James D. McDowell, Yorkville, who has been forced to relinquish practice for some time on account of ill health, is at Saranac Lake, N. Y.

Physicians Must Report Illness.—Health Officer, Dr. J. Mercier Green of Charleston, moved by the failure of physicians of the city to obey the ordinance which requires the report at the health office of all transmissible diseases within twenty-four hours after diagnosis, has sent out an emphatic warning that all those who violate this ordinance hereafter will be dealt with in the recorder's court.

TENNESSEE.

College Opens.—The Medical Department of the University of Tennessee, Nashville, opened for its annual session September 16. The term will be seven and a half, instead of seven months, as heretofore. The opening address was made by Dr. Charles A. Walters.

Confidence Man Sentenced.—A smooth-talking individual who operated in Knoxville several months ago, presenting checks on a Muncie (Ind.) bank, which were invariably returned endorsed, "no funds," and who was known as Dr. J. F. Ross, Dr. Barry and Dr. Spalding, is said to have been sentenced to serve a term of four and one-half years in the Alabama State Penitentiary.

Communicable Diseases.—The Nashville Board of Health reports a decrease in the number of local typhoid fever cases.——A number of cases of scarlet fever are reported in Knox County and the school at Powell's station has been closed in consequence of the prevalence of the disease.——Several cases of scarlet fever are reported at Mount Pleasant.——An outbreak of scarlet fever is reported at Marysville, Blount county. The origin of the epidemic is said to have been traced to Atlanta, Ga.

Personal.—Dr. and Mrs. William D. Haggard, Nashville, have returned from Europe.——Dr. Edward F. Malone, Nashville, sailed for Europe September 25.——Dr. A. E. Rippey, Obion County, has been appointed physician at the state prison, vice Dr. Frank Head, resigned.——Dr. George F. St. John, Knoxville, has been appointed physician at the prison camp, Brushy Mountain.——Dr. Michael Campbell, superintendent of the Eastern Hospital for the Insane, Knoxville, who has been critically ill, is reported to be improving.

VIRGINIA.

Failure to Report Births.—Six physicians of Norfolk, who failed to comply with the law which requires all physicians to report births to the board of health, have been summoned to appear in the police court to answer this charge.

Richmond Deaths in August.—The total number of deaths reported in August was 186, equivalent to an annual death rate of 19.47 per 1,000. The deaths from all causes among infants under one year of age were 37, as compared to 72 in the previous month, and the deaths from infantile diarrhea decreased from 44 in July to 22 in August.

Personal.—Dr. E. Guy Hopkins, city bacteriologist of Richmond, resigned August 15 and has been succeeded by Dr. H. B. Spencer.——Dr. E. W. Magruder of Richmond, who has been for three weeks in the Virginia Hospital, ill with typhoid fever, has recovered.——Dr. Richards, Richmond, who has been seriously ill at the City Hospital, has gone to Blue Ridge Springs to recuperate.

WASHINGTON.

Medical Examination of Pupils.—For the first time in the history of the schools of Seattle, periodic medical examinations are to be made of all pupils.

Society Organized.—The physicians of Palouse met August 20 and organized a local society with the following officers: President, Dr. J. Earl Else; vice-president, Dr. Walter Farnham, and secretary-treasurer, Dr. George T. Boyd.

School Named for Physician.—The Seattle board of school directors has named the new school building on North Queen Anne hill, the "Frantz H. Coe" school, in memory of the physician of that name who was formerly president of the school board of the city.

Hospital Notes.—The new hospital building at the Soldiers' Home, Oreting, is nearly completed.——A dwelling house in Woodland has been leased by the officials in charge of the railroad work, to be used as a hospital for the men employed on that division of the road.

WEST VIRGINIA.

State Board of Health Election.—At the annual meeting of the State Board of Health Dr. Joseph E. Robins, Claremont, was elected president, vice Dr. David P. Morgan, Clarksburg, term expired, and Dr. Hugh A. Barbee, Point Pleasant, was re-elected secretary and executive officer of the board.

Society Organized.—Following an address by Dr. J. N. McCormack at Hinton, September 9, the physicians of Summers County organized a county medical society, which begins work with twelve members and a good prospect of securing the remaining ten physicians in the county. Much interest was aroused by Dr. McCormack's address, speeches being made at the public meeting by several prominent citizens regarding the benefits of cooperation between the medical profession and other forces of society. The newly organized society elected Dr William L. Barksdale, president; Dr. John F. Bigony, secretary, and Dr. William N. Palmer, treasurer, all of Hinton.

Personal.—Dr. Garver, formerly of Pittsburg, has been appointed assistant to Dr. Charles A. Sinsel, Baltimore & Ohio medical examiner at Grafton.——Dr. Robert W. Fisher, Morgantown, has been discharged from the City Hospital, convalescent.——Dr. John L. Dickey, Wheeling, who has been in Europe, returned September 16.——Dr. John E. Cannaday, Hansford, has resigned as surgeon in charge of the Sheltering Arms Hospital, to take effect November 1. After a tour of Europe Dr. Cannaday will locate at Moundsville, where he will be surgeon in charge of the Reynolds Memorial Hospital. ——Drs. William H. McLain, Eugenius A. H. Hildreth and Andrew J. P. Wilson have been appointed a local board of health for Wheeling.

GENERAL.

Yellow Fever.—The U. S. Consul at San José, Costa Rica, reports that owing to the prevalence of yellow fever in Cuba the government of Costa Rica has declared quarantine against that island.

Leper Colony for Guam.—The naval surgeons at Guam have perfected a plan for the segregation of 100 or more lepers on that island. A site has been selected for a leper colony and the lepers, it is believed, will be in part self-supporting.

The Plague.—Dr. Rupert Blue, U. S. P. H. & M.-H. Service, who is in charge of the plague situation in San Francisco, has secured an appropriation of $25,000 from the rehabilitation fund to be used in sanitary work throughout the city.——A case of plague is reported on a German steamship which arrived in Manila July 23.

Compulsory Vaccination in Porto Rico.—Acting on the recommendation of Governor Post, the executive council has decided to institute compulsory vaccination in Porto Rico, and 600,000 vaccine points have been ordered. No death has occurred from smallpox on the island since 1898, when the entire population was vaccinated by order of the United States authorities.

To Investigate Tropical Diseases.—Captain James M. Phalen and Lieutenant Henry J. Nichols, assistant surgeons U. S. Army, have been appointed members of the army board for the investigation of tropical diseases, replacing Captains Percy Ashburn and Charles F. Craig, assistant surgeons, who have been ordered to return home, their tour of duty on foreign service having expired.

Work of the Porto Rico Anemia Commission.—The commission has stations established at 34 points and during May had 63,032 patients under treatment, with 13,516 applicants and 61 in the hospitals. There were only 20 deaths during the month. In June 7,882 patients applied to the dispensaries and nearly 15,000 are still under treatment. Between 200 and 300 houses were inspected each month.

Medals Awarded.—The Mary Kingsley medal, instituted by the School for the Study of Tropical Diseases, Liverpool, in memory of the African traveler, Miss Mary Kingsley, has been awarded to Dr. Carlos Finlay, Havana, chief sanitary officer of Cuba, and to Colonel William C. Gorgas, assistant surgeon-general U. S. Army, chief sanitary officer of the Canal Zone, on account of their work in regard to yellow fever, and to Dr. Theobald Smith of Harvard Medical School for his investigations regarding blood parasites in the so-called Texas fever of cattle.

Changes in Faculty of Army Medical School.—The following changes are announced in the faculty of the Army Medical School, Washington, D. C., for the ensuing session, which begins October 1: Majors William D. Crosby and Francis A. Winter, surgeons, have been appointed members of the faculty, vice Majors William C. Borden and James D. Glennan, surgeons, ordered to the Philippines. It is expected that the vacancy in the chair of clinical microscopy and bacteriology, caused by the death of Major James Carroll, will be filled by the detail of Captain Frederick F. Russell, assistant surgeon.

Strike of Sanitary Employés.—Captain Henry D. Thomason, assistant surgeon U. S. Army, in charge of sanitary work at Cienfuegos, was confronted a few days ago with a strike among civilian employés whom he had taken with him from Havana on account of their proficiency in sanitary work and who were acting as instructors for others. At the end of a month, on account of some slight delay in the arrival of their pay, they went on strike and tried to coerce their local associates to join them. Thanks to the tact of Captain Thomason the local men refused to strike and the work of sanitation went on without serious interruption. In the meantime Captain Thomason completed the vouchers, paid the strikers, and summarily dismissed them with the notice that they would not be re-employed under any circumstances.

Personal.—Dr. John N. Thomas of the United States Public Health and Marine-Hospital Service, has returned after an investigation and inspection of conditions at the ports of Tampico, Vera Cruz, Coatzacoalcas, Sabina Cruz, Progreso and interior towns near these points.——Dr. Park Findley, in charge of the hospital of the Mexican Central railroad at Monterey, verifies the report that yellow fever is feared in that city, and that typhoid fever is prevalent and increasing. ——Dr. Francisco Varela, consulting physician in the Princess Hospital, Madrid, has opened an office in Manila.——Dr. P. W. Monroe, on August 31, was elected house surgeon of the American Hospital, City of Mexico, vice Dr. Charles Westmoreland.——Dr. Gustavo Pagenstecher, City of Mexico, was successfully operated on for appendicitis at his sanitarium, September 7.

Society Meetings.—At the annual meeting of the Association of the Lehigh Valley Railroad Surgeons held in Wilkes-Barre, Pa., September 6, the address of the president, Dr. Grosvenor R. Trowbridge, Buffalo, impressed the importance of dealing promptly with railroad accidents, on account of the liability to the development of neuroses. Buffalo was selected as the place of the next annual meeting, and the following officers were elected President, Dr. James B. Tweedle, Weatherly, Pa.; vice-presidents, Drs. William Taylor, Canastota, N. Y.; Phaon Hermany, Mahanoy City, Pa.; and George W. Tyrrell, Perth Amboy, N. J.; secretary, Dr. Jacob G. Zern, Lehighton, Pa., and executive committee, Drs. William G. Weaver, Wilkes-Barre, Pa., Charles H. Ott, Sayre, Pa., and T. Ben Johnson, Towanda, Pa.——The National Medical Association, composed of colored physicians, pharmacists and dentists, held its seventh annual convention in Baltimore August 27 to 29. The following officers were elected: President, Dr. William H. Wright, Baltimore; vice-president, Charles Roberts, New York City; secretary, J. A. Kenney, Tuskegee, Ala.; treasurer, Dr. A. Wilberforce Williams, Chicago, Ill.; assistant secretary, Dr. Isaac A. Lawrence, Elizabeth, N. J.; corresponding dental secretary, L. H. Fenderson, Washington, D. C., and corresponding pharmaceutical secretary, Phillip D. Lee, Milledgeville, Ga. It was decided to hold the next annual meeting in August, 1908, in New York City. ——The eighth annual meeting of the American Roentgen Ray Society will be held at Cincinnati, October 2 to 4, under the presidency of Dr. Preston M. Hickey, Detroit, Mich.

FOREIGN.

Electricity in Therapeutics Restricted to Medical Men in Germany.—According to a recent notice of the minister of medical affairs in Germany, the application of electricity in treatment of disease, even in the form of electric baths, is to be regarded as pertaining to the practice of medicine.

The Liverpool School of Tropical Medicine.—The British government has made a fresh grant of $2,500 a year to the Liverpool School of Tropical Medicine; this makes $5,000 a year for five years. At present this school has five expeditions out studying malaria, sleeping sickness and yellow fever.

Care of Lepers in Japan.—It is reported that an imperial ordinance with regard to leprosy has been issued in Japan. At a conference of authorities, it was determined to begin at once the erection of buildings in five prefectures, the expense to be borne by the imperial and local treasuries. It has also been decided to begin enforcing the isolation law in April, 1908. Foreign lepers, it is said, will be allowed to land in exceptional cases, and for a short time only.

Lectures on School Hygiene.—A course on school hygiene, including lectures, demonstrations and practical work, has been arranged to begin Oct. 12, 1907, at University College, London. The course will be given by Prof. Henry Kenwood and Dr. H. Meredith Richards. It is designed to meet the requirements of school teachers, school lecturers and those qualifying for school inspectorships and as school medical officers. A certificate of proficiency will be granted to those who qualify themselves.

Endowment to Prevent Alleged Human Experimentation.—A Parisian capitalist has offered the hospitals of Paris $200,000 for a committee to obtain cognizance of and to prevent foolhardy operations and therapeutic experiments on the patients in the hospitals. The would-be donor states that no member of the medical profession is to be allowed on the committee. The authorities have not accepted the "Soller endowment," but the fact that it was offered has aroused intense indignation in medical circles.

Right of Medical Associations to Sue Irregulars for Damages.—The Medical Syndicate of Savoy, France, and the Medical Association of Savoy recently brought joint suit for damages against a man practicing massage and irregular medicine, who had previously been sentenced by the courts for illegal practice of medicine. They asserted in their plea that the moral interests of the medical profession require that the practice of medicine should be restricted to those legally qualified to practice medicine, and that they were entitled to damages for the injury resulting from the illicit competition of the illegal practice of medicine. The decision of the court confirmed the justice of their plea, and condemned the defendant to $60 damages and costs.

Sale of a Medical Practice Not Legal in Germany.—The civil courts confirm the decisions of the medical court of honor in regard to the impropriety of buying or selling a medical practice. Physicians who have tried to recover the sum agreed on by contract at the time of sale have found that such a contract is not recognized as legal in the courts. The great mischief in such a transaction was stated to be that the seller would pay less attention to the scientific attainments of the buyer than to his capacity for paying the sale price. Another argument against the practice is that the buyer would be unable to pay the sum agreed on without extreme efforts and sacrifice of various kinds, detracting from his professional usefulness. In the latest test case a dentist sold his apparatus to another under contract to pay nearly $400 monthly for at least six months, with no mention of the sale of the practice. Both parties were registered physicians.

Latest Report from Koch in Africa.—Extracts from Robert Koch's latest report on his work on sleeping sickness in the heart of Africa are published in the *Deutsche med. Wochschr.* for September 5. He has found a few more endemic foci in German possessions in the vicinity of Uganda. At one of these points the glossina had been found the year before, but no cases of sleeping sickness. Importation of a few cases has resulted in the development of an endemic focus. He found in the province of Kisiba so many cases that he established another camp for treatment of the disease, near a village of 3,000 inhabitants, the native authorities aiding in the construction of native huts with a pavilion for the microscopic work. In a few days 200 sick had gathered at the spot and treatment was commenced at once. Dr. Kudicke was left in charge of the work at this point. Koch is convinced that all of the 400 cases of sleeping sickness he encountered in this district were imported cases, as the men had returned recently from work in the infected district of Uganda to the north. He found only eight cases, all in women who had not left the region, which he regarded as acquired at home. The women had possibly become infected by some other agency rather than the sting of the glossina, as it was found impossible to discover the glossina in this district. No mention is made of the methods or results of treatment in the extracts from his report given out for publication by the German authorities.

Congress of French-Speaking Neurologists and Alienists.—The question of medical expert testimony in regard to the responsibility of criminals was discussed at this congress, which was held at Geneva in August. The French law states that there is no criminality when the accused was in a state of dementia at the time the act was committed. The congress adopted a resolution to the effect that magistrates in their conduct of cases and in their judgments should not call on physicians to determine the responsibility of the accused, as this exceeds their competence. Another resolution advocated that the law should be amended to recognize the conception of medical or physiologic responsibility, and to provide for the compulsory treatment in special establishments of condemned criminals whose responsibility has been recognized as attenuated or abolished. Periodical psychoses and idiopathic mania and melancholia were discussed by Régis and others. In Régis' own experience fully 70 or 80 per cent. of his patients with mania or melancholia, under observation for more than twenty years, have not manifested any tendency to recurrence of the trouble. In Ballet's experience the non-recurring cases are the exceptions. Dupré cited the histories of the musicians, Schumann and Hugo Wolff, as examples of periodical psychoses. The former had six long periods of melancholic depression, alternating with periods of excitement with productive energy and cheerfulness. His uneven musical work reflects these oscillations in his psychic activity. Delirium and hallucinations finally ensued, with attempts at suicide and death from a diffuse chronic affection of the brain. Wolff also passed through four periods of excitement and productive activity, alternating with long periods of inactivity and silence. He also succumbed early to a chronic diffuse affection of the brain. The subject of "Hysteria" was again thrashed over, and a group of cases reported to disprove Marie's conception of the organic seat of aphasia.

LONDON LETTER.

(From Our Regular Correspondent.)

LONDON, Sept. 14, 1907.

Insanity in Great Britain in 1906.

The annual report of the British Commission in Lunacy, just published, is a "dry-as-dust document," containing no illuminating papers. From a perusal of the report, it might be easily imagined that the commissioners do not recognize insanity as a disease. The compilation of statistics seems to be looked on by them as their sole duty. The report reveals with more or less clearness the fact that insanity is increasing in England, despite the continually reiterated suggestion that, notwithstanding the increase of numbers in asylums, insanity may not be increasing so rapidly as figures would lead us to suppose. On Jan. 1, 1859, the total number of the certified insane in England and Wales was 36,762; and on Jan. 1, 1907, it was 123,000, a rate of increase equivalent to 237.2 per cent. The estimated general population increased during the same period only at the rate of 77.5 per cent., so that the amount of recorded insanity has increased during the past fifty years at just about three times the rate of population. As to the causes of insanity, the commission appears to be at sea, although reference is made to drink, venereal disease and other causes usually brought forward. The medical control of asylums in England has been more concerned with discipline than with the requirements of science.

Coal Mine Inspection.

The British Royal Commission on Mines has appointed Dr. A. E. Boycott of the Lister Institute of Preventive Medicine to make an investigation to see if ankylostomiasis exists in coal mines in England. Mr. J. Cadman, assistant inspector of mines, is appointed to test mine air to see whether or not any standard of ventilation should be enforced for mines.

Medical Inspection of School Children.

The English board of education has decided to establish a medical department to advise and to assist in regard to medical inspection of school children in England and Wales. Dr. George Newman is made chief medical officer. He has been medical officer of health to the metropolitan borough of Finsbury since 1900. Dr. Alfred Eicholz, who has been for nine years a medical inspector of schools, will also be appointed to the medical department.

Anthrax in Great Britain.

Anthrax among human beings has increased considerably in Great Britain during the past few years. In 1905 there were 59 cases of anthrax in Great Britain, with 18 deaths; and in 1906 these numbers rose to 67 and 22, respectively, the highest recorded in any year since notification became compulsory in 1896. Bradford and district in Yorkshire, the headquarters of the woolen industry, are the parts of the country in which the malady is most prevalent. The local government board for Scotland has issued circulars to all medical officers of health, stating that the board has been approached by the Board of Agriculture and Fisheries as to the desirability of making arrangements for the notification of cases of glanders, anthrax and hydrophobia in man, in which the facts point to the possibility of infection from an animal or its carcass, or in which inquiry under the Diseases of Animals Act seems desirable in the opinion of the medical man concerned.

Dental Disease in Children.

A paper was read on this subject at the recent meeting of the British Medical Association. According to Mr. Edmund Owen, one of the chief causes of dental disease in children is faulty feeding. Mr. Owen further insisted that all advertised sterilized foods are bad for children's teeth, and if a child must be brought up on cow's milk, the milk should not be dealt with in any way likely to destroy that living something, which is essential to the well-being of the child. The manufacturer of drugs, the mere tradesman, has of late taken on himself to teach medical men how to prescribe and the vendor of patent foods dictates to the profession and the public as to how children should be fed, while the profession and the public allow themselves to be led. In his opinion, prevention of dental disease in children is a better study than its treatment, and the so-called "high" civilization of the day is accountable for most of dental troubles.

Special Schools for Physically Defective Children.

It is now eight years since the London school board opened the first invalid center for the instruction of children who, owing to chronic ill health or to physical defect, are unfit to mix with their fellows in the ordinary schools. These schools are principally intended for children suffering from the severer forms of surgical tuberculosis. The number of centers has increased until at the present time there are 23 in various parts of London, accommodating 1,428 children. Ambulances are used to take the children to and from school and a mid-day meal is provided, for which the children pay a small sum if able, otherwise it is provided free through the generosity of a voluntary association. Medical supervision and necessary nursing is provided. Dr. R. C. Elmslie, local assistant medical officer to the education committee of the London County Council, found among 1,050 of these children 72 not properly included under the conditions for which these schools were primarily intended. This group included semi-blind, semi-deaf, and nervous children unfit to mingle with healthy children in a large school. Of the others about one-half suffered from tuberculous bone or joint disease, generally in an advanced and inactive state, in whom deformity had been produced long before the school age was reached. Assistance is given by the voluntary association in finding suitable work after leaving school. The results, however, are not satisfactory. In criticising the methods, Elmslie points out that voluntary work is not always systematic, and the well-meaning workers have often insufficient technical knowledge and have no power over improvident parents who care more for the wages of their child as an errand boy than to have him apprenticed to a suitable trade. It is estimated that only 20 per cent. of the children will be able to earn their living at any ordinary occupation, 50 per cent. will be able to work at special skilled work, and the other 30 per cent. will either not live or be totally unable to support themselves.

VIENNA LETTER.

(From Our Regular Correspondent.)

VIENNA, Sept. 14, 1907.

The Smallpox Epidemic.

The epidemic of smallpox, which was discussed in a previous letter (THE JOURNAL, Sept. 14, 1907, p. 952), is now under control. The number of cases officially reported is 120. Practically all the infected individuals lived in the densely populated southern portion of the city. The source of the epidemic has been traced to a woman engaged in cleaning and sorting feathers, imported from Russia. An appeal to the public, from the medical and public authorities, to submit to vaccination was responded to at once so freely that the enormous demand for vaccine could not be met. At least 20,000 people are being vaccinated daily at the 53 public vaccination stations alone, to say nothing of those that are being inoculated privately. The entire supply of vaccine from Budapest, Berlin and Switzerland was required to deal with the emergency, and within a fortnight more than 500,000 persons were reported to the board of health as having applied for vaccination. Of the cases of smallpox reported, 76 per cent. of the patients either had never been vaccinated or had not been vaccinated for over twenty years. Of the remaining 30 cases, 14 of the patients had been vaccinated only between six and eight days previous to being attacked, so that infection had taken place before immunization was possible. Ten patients have died—all of them of the "non-vaccinated." As regards the age of the infected, 33 per cent. were below 10 years, 30 per cent. between 10 and 25 years, and the rest between 25 and 60 years; the mortality was 9 per cent., 4 per cent. and 1 per cent., respectively.

Therapeutics

[It is the purpose of this department to outline an up-to-date management of disease, to suggest scientific treatment for diseased conditions, and to present prescriptions that are simple, useful and palatable. Prescriptions are written in both the metric and apothecaries' systems, but the amounts of the ingredients are NOT exact translations of one system into the other, but quantities convenient for pharmacist and physician. It should be understood that solids are weighed in grams or fractions of grams, while liquids are measured in cubic centimeters; that a teaspoon holds five cubic centimeters, i. e., more than a fluid dram, hence a 100 cubic centimeter preparation will contain twenty doses.]

Gastric Ulcer.

Dr. William A. Dickey, Toledo, Ohio, (*Medical Record*, June 29, 1907), after discussing the diagnosis of the condition and the advisability of surgical interference, marks out the treatment that is most successful and often renders surgery unnecessary. "Rest in bed is absolutely essential, for from ten days to three weeks. If there is hemorrhage, the patient must not assume the upright position under any circumstances. If there is vomiting, especially of particles of food, the stomach should be washed out by means of a tube with a weak alkaline solution until the water comes away perfectly clear. No food should be allowed for five days except in rare instances. Thirst may be allayed by rinsing out the mouth with cold water, or pellets of ice may be held in the mouth. The hyperchlorhydria, which is so generally present, should be arrested by the administration of such alkalies as sodium bicarbonate and subnitrate of bismuth." He advises half-teaspoonful doses of subnitrate of bismuth suspended in water, given once or twice daily. After the patient takes the bismuth he should lie on the side in which the ulcer is supposed to be situated. During convalescence, or in the milder forms of the disease when the patient is ambulatory, Dickey advises nitrate of silver, and gives it in tablespoonful doses, 0.1 of 1 per cent. solution. Administration of Carlsbad salt in the morning as an antacid and a laxative is considered good treatment.

The best treatment of hemorrhage from the stomach is stated to be the application of the icebag to the epigastrium and the swallowing of pellets of ice. Dickey does not place much confidence in such drugs as opium, acetate of lead, ergot and adrenalin.

While urging "the necessity of complete rest of the stomach by putting nothing into it during the first days of treatment of the ulcer, instances will arise, however, from time to time, in which the nutrition of the individual will be at such a low ebb that rectal feeding will not be sufficient." In such patients it would be well to risk a small amount of food by the stomach after the original five days' fasting. If possible, "however, the principal reliance should be for as many days as possible, on rectal feeding." "Before giving the nutrient enema, the bowel should be well washed out with warm soapsuds so that the material injected may be the better absorbed. Milk and eggs, and occasionally meat powder, and if a stimulant is wanted wine or brandy, to all of which should be added a pinch of salt, is probably the best." He does not think that it is absolutely necessary to predigest this nutriment. "If there is a tendency for the bowel to expel the enema, from 15 to 20 drops of tincture of opium may be added to each enema. The temperature of the injected fluid should be that of the body, and the tube should be inserted as far up the colon as possible."

The exact procedure is to wash out the lower bowel early in the morning with a quart of warm saline solution, then to give the nutrient enema. The nutrient enema should be repeated three times in twenty-four hours. "If there is great

thirst, a pint of warm physiologic saline solution should be injected periodically into the colon."

On returning to stomach nutrition he cautions against overdistension of this organ. "Small quantities of ice-cold milk and lime water (three parts milk to one part lime water) may be given at two-hour intervals. A teaspoonful of meat jelly should be administered at three-hour intervals, as the amount of milk given is not sufficient for the nutrition. The meat jelly is prepared by boiling beef with calf's foot until it is thoroughly cooked, when a gelatinous mass is formed. While cooking, an egg is added, stirring the whole meanwhile, and the mixture is then strained. Salt is added to suit the taste, and the food is given cold." As the object is to prevent hyperacidity of the stomach, if possible, "care must be taken in the administration of albumins, but it may be necessary to give some carbohydrates." He quotes Senator as recommending gluten, fat and sugar with small quantities of albuminoids in a decoction of gelatin. For the fat he uses in addition to the cream, small bits of frozen butter. The theory of the gelatin is that it prevents hemorrhage and at the same time replaces in a degree the albumin. The diet should be gradually but slowly enlarged and made more liberal, but meat should be the last food given, though Lenhartz does not believe that scraped raw beef does any harm.

We are a little surprised that the author has not more belief in tannic acid or in suprarenal extract in the treatment of hemorrhage from ulceration of the stomach. We are also not sure that a solution of iron may not be needed in serious danger from gastric hemorrhage, however objectionable the clots may be. Calcium chlorid has also been given in solution as a styptic in gastric hemorrhage.

Duodenal Ulcer.

Dr. G. W. McCaskey, Fort Wayne, Ind. (*Fort Wayne Medical Journal-Magazine*), thinks the same etiologic factors are at work in causing duodenal ulcer as cause gastric ulcer and peptic ulcer of the lower end of the esophagus. "While there is no doubt that the action of the gastric juice, i. e., pepsin and hydrochloric acid, is the essential factor in the final destruction and solution of the tissue which occupies the site of the ulcer, there must be something back of this which destroys the vitality of the tissue at the point of ulceration without which such erosive digestion could not occur." Dr. McCaskey does not believe that hyperacidity or hyperchlorhydria is the only cause of these ulcers, or even a necessary cause, as he has seen these ulcerations with complete absence of hydrochloric acid in the stomach contents.

"The differential diagnosis of duodenal from gastric ulcer is sometimes a very difficult and often an impossible problem when we remember that gastric ulcer occurs most frequently at the pyloric end and that duodenal ulcer is by much the most frequent also near the pylorus, it will be readily understood that the symptomatology may be practically identical in the two conditions. There are, however, certain symptoms which enable us to make the differentiation with more or less certainty in some cases, although it may be impossible in others.

"The seat of pain, and especially tenderness, differs somewhat. In duodenal ulcer it is mostly found just below the liver in the right parasternal line, while in ulcer of the stomach it is higher up and further to the left. If, however, we recall how short may be the distance from a duodenal ulcer on one side of the pylorus to a gastric ulcer on the other side, we can readily see that if the tenderness corresponds to the location of the ulcer the difference may not be great. Furthermore, the mobility of the stomach even in health and especially its altered position even in ptosis and ectasia, will tend to throw doubt on the validity of the particular sign.

"The time of occurrence of the pain is also very significant. As a general rule the pain in gastric ulcer occurs almost immediately after the ingestion of food, while that of duodenal ulcer does not usually commence sooner than two or three, and may be as late as four or more hours after the meal. These are the typical time relations of pain to the digestive processes, but here again we meet numerous exceptions and occasionally find that the pain of gastric ulcer is late and the pain of duodenal ulcer early. Nevertheless, this is one of the most valuable diagnostic points to aid in the differentiation of the two conditions.

"The treatment of duodenal ulcer should be governed by the same general principles as are applicable to the treatment of gastric ulcer. Rest as absolute as possible, and freedom from all irritating material are the fundamental requirements. The anatomic and physiologic conditions presented, however, are somewhat different from those which obtain in gastric ulcer, and the treatment deserves a separate consideration. The thinness of the duodenal wall makes perforation much more likely to occur and the hazards, therefore, are very much greater than in gastric ulcer. Active peristalsis or the presence of hard food masses are especially dangerous by producing a tension of the base of the ulcer which may at any moment cause perforation into the colon, pancreatico-duodenal-artery, vena cava or peritoneal cavity. On making a diagnosis, or entertaining a strong suspicion of duodenal ulcer, the patient should be placed in bed and kept absolutely quiet. Nothing whatever should be taken by the stomach either in the way of food or drink.

"With regard to stomach medication we must again be governed by the individual case. If we have reason to believe or have been able to determine by a chemical examination of the contents of the stomach, obtained by lavage, that there is a continuous secretion in the stomach in the intervals of digestion, then alkalies and especially bismuth in large doses, should be given. If, on the other hand, the stomach is believed to be empty and free from secretion, when neither food nor fluid has been taken, then I believe that the best treatment is to withhold drugs of all sorts from the stomach, because even bismuth will probably excite some secretion and peristalsis, otherwise it would never reach the duodenal ulcer. The symptoms must be combated, of course, as they arise. Pain may require codein or even morphin, and vomiting under certain conditions may be relieved by gastric lavage."

Tobacco Poisoning.

Dr. L. Pierce Clark, New York (*Medical Record*, June 29, 1907), sums up the results of experimentations on animals with tobacco by stating that it is fairly proved that:

"1. Tobacco is primarily a cardiovascular poison.

"2. It is first an excitant to the neuromuscular apparatus and then a motor nerve depressant, and finally a paralyzant of the central and peripheral nerves of the heart and lungs.

"3. It can produce a mild type of degenerative neuritis."

When studying what appear to be functional disturbances in male patients we should never forget to inquire concerning the amount of tobacco that is being used. The action on the heart is rather generally understood, but that young men can prevent the proper development of their lung capacity by oversmoking is not sufficiently recognized. It is also not noted that leg weariness, pains in the calves of the legs, and even joint pains and irregular or localized nerve pains, to say nothing of digestive disturbances, are often caused by the overuse of tobacco. Profuse perspiration on least exertion, and especially of the palms of the hands, with the tendency of the hands and feet to be cold are many times indicative of overuse of tobacco. Hence any treatment that is instituted for the disturbed conditions must be coincident with the absolute withdrawal or decided diminution of the tobacco.

When the tobacco is abruptly stopped bromids should be given for a few days, as they prevent the intense nervousness

caused by the withdrawal of the narcotic. A laxative is also often needed, as nicotin is a stimulant to intestinal peristalsis. Many times small doses of digitalis and strychnin are needed to tone up the circulatory system.

Cerebral Hemorrhage.

Sir William R. Gowers, in the *British Medical Journal*, July 6, 1907, emphasizes the need for absolute physical and mental rest in this condition. He decries the transportation of a patient who has suffered from cerebral hemorrhage, or thrombosis or embolism, from one place to another. He is convinced that jarring and physical disturbance may cause a fatal termination in a case in which the patient might otherwise recover. "If a vessel has ruptured, an active purge is wise, such as croton oil, to lower the blood pressure. Salines, it should be remembered, seldom alone act well in a horizontal posture; they need the aid of gravitation.

"If there is reason to regard the lesion as thrombosis, little more can be wisely done. We have no practical agents to reduce the coagulability of the blood. Citric acid is said to have this effect, and may be given as lemon juice in plenty of water. When hemorrhage may be confidently diagnosed, the treatment should be such as to increase the tendency of the blood to clot. Salts of calcium have this effect, and may be given in whatever form can be most promptly obtained. Arsenic, by hypodermic injection, has a similar effect, and one-fifth of a grain of the arsenate of sodium may be given in a few drops of water. There is no reason to believe that small doses of iodid of potassium, which are constantly given in the early or later stage, exert the slightest influence."

We are surprised that a lowering of the blood pressure is not more considered in this condition, as if the blood pressure is high venesection should certainly be done. Also nitroglycerin may be given to dilate the vessels of the body and thus relieve the tension in the head.

If there is a gouty condition, Gowers suggests the administration of lithium, or potassium combined with some diuretic as spirits of juniper, and if there is a weak heart action he would also give digitalis. We can not agree with him that the iodid of potassium as an after-treatment is of no benefit, especially if any condition of arteriosclerosis is present. Also when there is thrombosis we should consider it of value. Iodid of potassium in small doses, not sufficient to disturb the digestion, certainly renders the blood pressure less high and diminishes the viscosity of the blood.

The calcium above referred to may be administered in the following manner:

R.	gm. or c.c.		
Calcii chloridi	5		gr. lxxv
Acaciæ granulatæ	10	or	ʒiiss
Aquæ menthæ piperitæ	ad 100		ʒiii

M. Sig.: A teaspoonful, in plenty of water, every three hours.

Mouth Wash.

R.	gm. or c.c.		
Sodii bicarbonatis	50		gr. viii
Sodii boratis	50		gr. viii
Olei pini	1	or	m. xv
Glycerini	10		fl3iiss
Aquæ	ad 100		flʒiv

M. et sig.: Mix with four parts of water for mouth wash, or use undiluted in atomizer.

Lotions for Pruritus.

R.	gm. or c.c.		
Resorcinolis	10		ʒiiss
Thymolis	1		gr. xv
Sodii boratis	2		gr. xxx
Phenolis liquefacti	10	or	fl3iiss
Glycerini	10		fl3iiss
Alcoholis	50		flʒii
Aquæ	ad 500		Oi

M. et sig.: Apply externally.

R.	gm. or c.c.		
Sodii salicylatis	10		ʒiiss
Chlorali hydrati	4		ʒi
Glycerini	10	or	fl3iiss
Alcoholis	10		fl3iiss
Aquæ	ad 200		flʒvi

M. et sig.: Apply externally.

Correspondence

Chemistry in Medical Colleges.

PHILADELPHIA, Sept. 14, 1907.

To the Editor:—Among the many ways in which THE JOURNAL has benefited the profession, not the least, in my opinion, is the information given concerning the state board examinations, the questions and the results. Unfortunately, the full details are necessarily withheld, and it is even unusual for the public to be furnished the marks for the individual branches. In a recent number[1] the latter data are given, and some points that appear from a study of them are, I think, worthy of special mention. According to that report, 90 applicants passed and 32 failed. Among the former, the chemistry has the lowest mark (or, at least as low as any) in 34 instances; among the latter chemistry has the lowest mark in 16. More than one-third of the successful candidates and one-half of the unsuccessful found their danger line in chemistry. In a few other cases the chemistry mark is saved from being the lowest only by a narrow margin.

It seems to me that this fact is due to three conditions: Chemistry is a very difficult branch; it is discontinued in most colleges at the close of the second year, so that the student has two years in which to forget it; the examinations are, as a rule, more unfair than in any other branch. As an illustration of the last mentioned point, I will refer to the chemistry questions given by the Vermont board.[2] As the series is brief (which is one merit) I will quote it:

1. What is allotropy? In what elements is it exhibited? 2. Describe three elements belonging to the nitrogen group. 3. Describe the properties of ozone. At what time of year is it most abundant in the air? 4. Give an explanation of the processes of fermentation and putrefaction. 5. State important differences in composition of human and cow's milk. Describe in detail tests for albumin in urine.

The second part of the first question could scarcely be answered properly by any but special students in the department of physical chemistry. The second part of the third question is unfair. It is unlikely that the information will be found in ordinary text-books, and even if found, the statement is of no practical interest. The fourth question is unanswerable in the present state of our knowledge. The framer of the question probably intended to ask for "some account of the phenomena of the two processes." The only questions that are both fair and relevant are the second and fifth, and even the former is not well worded. I have watched with interest the trend in the case of chemistry questions. An improvement over the early forms may be noted, but much remains to be accomplished.

HENRY LEFFMANN.

Plastic Radiography.

CLEVELAND, OHIO, Sept. 22, 1907.

To the Editor:—Replying to the letter of Dr. J. E. Tuckerman in THE JOURNAL, September 21, page 1042: To give in full the reasons why we believe that the pictures shown in our article on Plastic Radiography (THE JOURNAL, August 31, page 751), are reproductions of the actual impressions made by the *x*-light from the use of two tubes on the negative plate would take more space than we are here allotted. We have ourselves once held the same views about it being only a "fake," as does Dr. Tuckerman, but several months' work convinced us that if we did not get a good plastic negative in the first place no amount of "out of register" or other "dodging" could produce a good plastic.

These plastic radiographs are not only "pretty and artistic pictures," but they are correct down to the finest details.

1. THE JOURNAL, Sept. 7, 1907, p. 873.
2. THE JOURNAL, Sept. 14, 1907, p. 963.

Reliefs made by placing plates out of register are blurred and obtain their contrast effects at the expense of the details. Our plastics show the finest details of the bony structure and are therefore anatomically correct and trustworthy. (This detail is beautifully reproduced in the excellent half-tone cut of the hand on page 752 of THE JOURNAL.) While we do not deny that by "dodging" one can obtain relief effects from any old negative, this fact does not detract from the actual value of the plastics any more than the fact that there can be made an artificial oil of wintergreen detracts from the value of the natural product.

The double-coated plates, made for us by the Lamieré Company, of Burlington, Vt., are not, as Dr. Tuckerman says, to decrease but rather to increase the contrasts, which as any one may know, is usually lacking on the ordinary *x*-ray plates. We do not even pretend to understand the "elementary" mathematical discussion. According to our algebra the combination of two plates, one a negative and one a positive, is an addition, not a multiplication, and the formula ought to read as follows: $K = (\underline{+})\,F + (\overline{+})\,F'$, instead of $K = F \times F'$, and as the points F and F' are identical points, $F = F'$ and $K = 0$. Q. E. D. WALTER G. STERN.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

RATTLESNAKE BITES.

Santee Agency, Santee, Neb., —— ——

To the Editor:—Please state in THE JOURNAL (1) the present status of the treatment of the bite of the rattlesnake. (2) Is there a known specific antidote? I have been told that a former physician of this agency had a formula emanating from the Smithsonian Institution, which given hypodermically was a specific, he having used it specifically in two cases. E. S. HART, M.D.

ANSWERS—1. Many consider the most practical method of dealing with all kinds of venomous snake bites to be by potassium permanganate, which, it has been demonstrated, neutralizes about its own weight of every kind of snake poison. A good method of employing it is that suggested by Brunton and Fayrer, of rubbing the pure crystals into the wound after ligating the limb above it, making free incisions, and applying suction by the mouth (care being taken that there is no abrasion of the mucous membrane) or by cupping, to encourage transudation of the poison. W. H. Haw recommends the use of an ethyl chlorid spray to freeze the tissues and thus, as it were, to keep the poison imprisoned in the part, so that it may be effectively dealt with by scarification, suction and potassium permanganate. Rogers reports 12 cases of snake bite, treated with permanganate crystals, with 10 recoveries, the two deaths occurring in patients who had not been seen until after a lapse of 9 hours. The liberal use of alcohol in the shape of whisky or brandy is also a practical measure and one in favor of which there is incontestable evidence. It is more commonly available, when needed, than any other, and may prove useful as an adjuvant, even when more scientific measures are at hand. Persons prostrated by snake bite do not appear to become intoxicated by even huge doses of alcoholics. Other measures that have been recommended are, strychnin hypodermically, adrenalin, 15 minims of a 1/1000 solution, intravenous injection of liquor ammoniæ, and artificial respiration, when indicated. O. T. Brown (*Medical Council*, July 1907), in addition to the hypodermic use of strychnin, ligature and incision, used immersion in 1/500 bichlorid solution in a successful case.

2. There is a specific therapy for snake bite, but it is so very specific that apparently each kind of snake poison requires its own particular serum antidote. Calmette's antivenin, for instance, appears of service only in cobra bites. Brazil reported in 1903 the use of his "antiophidic" serum in 21 cases, three of them very grave, in which recovery was prompt on the injection of from 20 to 60 c.c. of the serum. He makes three kinds, including one for rattlesnake poison. The necessity for different sera seems to be dependent on the fact that, as shown by Christini's experiments, snake poisons are products of digestion, the poison glands freeing the body from poisonous compounds formed in the blood. According to Fraser, the dried serum of a snake is practically identical with the snake's antivenin, i. e., the substance obtained from the blood serum of animals immunized by injection with small doses of the snake's poison. Bassewitz recommends the injection into the flank or scapular region, with aseptic precautions, of the snake's liver triturated with 50 to 100 c.c. of a .07 per cent. salt solution, and filtered through filtering paper or cotton. Also, since the elimination of the poison takes place largely through the stomach, he recommends drinking the contents of the snake's gall bladder as an additional means of bringing the antidote into direct contact with the poison. The necessity for different antivenins, and the fact that they are very expensive to prepare and spoil very readily, are serious causes militating against their usefulness.

3. Write to the Smithsonian Institution, Washington, D. C.

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The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Sept. 21, 1907:

Davis, W. B., deputy surgeon gen., will proceed, at the proper time, to Omaha, and report in person not later than Oct. 31, 1907, for duty as chief surgeon, Department of the Missouri. He will retain station in New York City pending his departure for Omaha.

Collins, C. C., asst.-surgeon, assigned to duty as surgeon, Camp at St. Joseph, Mo., during military tournament at that city, Sept. 23 to 28, 1907.

The following-named officers will report in person, in service uniform, mounted, to the Dept. Commander, on the dates and at the posts indicated below, for the purpose of testing their skill and endurance in horsemanship as prescribed in Special Orders 210, Dept. of the East and General Orders 181, War Dept., Aug. 30, 1907:

At Camp Captain, John Smith, Jamestown Exposition, Va., Oct. 11, 1907: Carter, W. F., surgeon; Woodruff, C. E., surgeon.

At Fort Ethan Allen, Vt., Oct. 16, 1907: Powell, J. L., surgeon; Gibson, R. J., surgeon; Hallock, H. M., surgeon.

At Fort Myer, Va., Oct. 21, 1907: Byrne, C. B., asst. surg.-gen.; Richard, Chas., surgeon; Mearns, E. A., surgeon; Winter, F. A., surgeon; Wilson, W. H., surgeon.

Reynolds, F. P., surgeon, assignment to duty at Fort Sill, Okla., revoked, and instead, ordered to Fort Snelling, Minn., for duty.

Arthur, W. H., and Edie, G. L., surgeons, appointed members of an Army retiring board to meet at Washington Barracks, D. C., on Oct. 15, 1907, for the examination of such officers as may be ordered before it.

Woodall, W. P., asst.-surgeon, relieved from duty at Fort Sill, Okla., and ordered to the Philippine Islands, for duty.

Boyer, P. L., asst.-surgeon, relieved from duty at the Army and Navy General Hospital, Hot Springs, Ark., and ordered to the Philippine Islands for duty.

Macy, F. S., asst.-surgeon, relieved from duty at Fort Williams, Me., and ordered to the Philippine Islands for duty.

Harvey, P. F., asst.-surgeon-gen., will proceed to Fort Thomas, Ky., and Forts Wayne and Brady, Mich., for the purpose of making an inspection of the sanitary conditions at those posts.

Gregory, J. C., asst.-surgeon, granted three months' leave of absence.

Brown, O. G., asst.-surgeon, will proceed to St. Joseph, Mo., for duty with troops at the camp hospital at that city during the tournament.

Banta, W. P., asst.-surgeon, ordered to Fort Riley, Kans., for temporary duty.

Gosman, G. H. R., asst.-surgeon, to accompany the 16th Infantry from San Francisco, to Fort Crook, Neb.

Zinke, S. G., asst.-surgeon, to accompany the 16th Infantry from San Francisco, to Fort Crook, Neb.

Lewis, W. F., asst.-surgeon, to accompany 16th Infantry from San Francisco, to Fort Logan H. Roots, Ark.

Lewis, W. F., surgeon, granted 23 days' leave of absence.

Havard, V., asst.-surgeon general., Carter, W. F., and Woodruff, C. E., surgeons, detailed to represent the Medical Department of the Army at the 16th annual meeting of the Association of Military Surgeons of the U. S. at the Jamestown Exposition, Oct. 15 to 18, 1907.

Cullen, C. W., contract surgeon, left Fort Sam Houston, Texas, for Fort Logan H. Roots, Ark., for temporary duty.

Worthington, J. R., contract surgeon, returned to duty at Fort Oglethorpe, Ga., from temporary duty at Fort Moultrie, S. C.

Chamberlain, G. E., contract surgeon, left Fort Walla Walla, Washington, on practice march with troops B and D, 14th Cavalry.

Repp, J. J., contract surgeon, granted leave of absence for 16 days, about Sept. 20, 1907.

Magee, J. C., contract surgeon, reported at Fort Michie, N. Y., for duty.

Garcia, L. C., contract surgeon, will accompany Battery C, 5th Field Artillery, to Fort Leavenworth, Kans., and then return to his station, Fort Riley, Kans.

Tuttle, A. D., contract surgeon, will accompany 2d Cavalry, to St. Joseph, Mo., report for duty at the hospital to be established at the camp, and at the proper time return to Fort Des Moines, Iowa, with the Second Cavalry.

Wolven, F. H., dental surgeon, will proceed, at the proper time, to San Francisco, and take transport to sail on or about Nov. 5, 1907, for the Philippine Islands.

Woolley, H. C., contract surgeon, will proceed from Fort Gibbon, Alaska, to Fort Davis, Alaska, for duty.

Coffey, A. McD., contract surgeon, will proceed from Fort Davis, Alaska, to Vancouver Barracks, Washington, and report to the Adjutant General of the Army for further orders.

Craig, E. J., dental surgeon, is relieved from duty in the Philippines Division and will proceed not later than Sept. 25, 1907, to Fort Leavenworth, Kans., for duty.

Millikin, J. D., dental surgeon, will proceed from Ft. Leavenworth, Kans., to Fort Sheridan, Ill., for duty.

McAlister, J. A., dental surg., will proceed from Fort Sheridan, Ill., to San Francisco, and take first available transport for the Philippine Islands for duty.

Wilson, E., contract surgeon, will proceed from Mohave City, Ariz., to Presidio of Monterey, Cal., for duty.

Bell, L. P., contract surgeon, left Fort Sheridan, Ill., on 10 days' leave of absence.

Barney, F. M., contract surgeon, relieved from further duty in Cuba and on expiration of present leave of absence will proceed to Fort Myer, Va., for duty.

Roberts, E. E., contract surgeon, will proceed from Fort Riley, Kans., to Fort Sill, Okla., for duty.

Bell, L. P., contract surgeon, will proceed to his proper station, Fort Riley, Kans., for duty.

Parkman, W. E., contract surgeon, returned to duty at Fort Keogh, Mont., from duty with troops, to San Francisco.

Navy Changes.

Changes in the Medical Corps, U. S. Navy for the week ending Sept. 21, 1907:

Campbell, F. E., P. A. surgeon, detached from the *Washington*, ordered home, resignation accepted to take effect October 1, 1907.

Clifford, A. B., asst.-surgeon, orders of June 17, revoked; detached from the *Maryland* and ordered to the Naval Hospital, Mare Island, Cal.

Cather, D. C., asst.-surgeon, detached from the *Pennsylvania* and ordered to the Naval Training Station, San Francisco.

Pleadwell, F. L., surgeon ordered to the Bureau of Medicine and Surgery, Navy Department.

Ohnesorg, K., P. A. surgeon, detached from the *Wabash* and ordered to the Naval Hospital, Philadelphia.

Belknap, J. L., asst.-surgeon, detached from duty with the Marine detachment, Camp Harrington, Va., and ordered to the *Wabash*.

Vickery, E. A., asst.-surgeon, ordered to the Naval Hospital, Boston.

Cowan, J., pharmacist, retired, detached from the Naval Recruiting Station, New York, N. Y., and ordered home.

Hoen, W. S., P. A. surgeon, ordered to additional duty with Recruiting Party No. 1.

Ames, H. E., medical inspector, detached from duty on board the *Connecticut* as fleet surgeon of the Atlantic Fleet, and ordered to command the Naval Hospital, Boston.

McLean, N. T., asst.-surgeon, detached from the Naval Hospital, Washington, D. C., and ordered to the Naval Station, New Orleans, September 25.

Grayson, C. T., asst.-surgeon, detached from the Bureau of Medicine and Surgery, Navy Department, and ordered to the Navy Yard, Washington, D. C.

The following assistant surgeons and acting assistant surgeons have been ordered to report for course of instruction at the Naval Medical School, Washington, D. C., Sept. 30, 1907: Asst.-Surgeons: M. E. Rose, W. H. Short, H. L. Kelly, M. A. Stuart; Acting Asst.-Surgeons: S. Bacon, C. W. O. Bunker, C. J. Holeman.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ended Sept. 18, 1907:

Stimpson, W. G., surgeon, granted leave of absence for three days from Sept. 17, 1907.

Cofer, L. E., P. A. surgeon, temporarily relieved from duty at Honolulu, and assigned to temporary duty at Ellis Island, New York.

Cofer, L. E., P. A. surgeon, leave of absence granted for one month from August 22, amended to read for 17 days only.

Mathewson, H. S., P. A. surgeon, directed to proceed to Canton, Ohio, for special temporary duty; on completion of which to rejoin his station at Cleveland, Ohio.

Goldberger, Joseph, P. A. surgeon, granted leave of absence for 11 days from September 3, on account of sickness.

Holt, J. M., P. A. surgeon, directed to proceed to Portland, Ore., for special temporary duty; on completion of which to rejoin his station at Columbia River Quarantine.

Vogel, C. W., P. A. surgeon, directed to proceed to San Francisco and report to P. A. Surgeon Blue for special temporary duty, Sept. 16, 1907.

Creel, R. H., asst.-surgeon, directed to proceed to San Francisco and report to P. A. Surgeon Blue for special temporary duty, Sept. 16, 1907.

Roberts, N., asst.-surgeon, leave of absence granted for 7 days from Sept 11, 1907, under Paragraph 191, Service Regulations, amended to read for two days only.

Ashford, F. A., asst.-surgeon, granted extension leave of absence for 10 days from Sept. 13, 1907.

Bean, L. C., acting asst.-surgeon, granted leave of absence for two days from September 16, 1907.

Griffitts, T. H. D., acting asst.-surgeon, granted leave of absence for 7 days from Sept. 10, 1907, and excused from duty without pay for 7 days, from Sept. 17, 1907.

Hicks, B. I., acting asst.-surgeon, granted leave of absence for 21 days from Sept. 6, 1907.

Royster, W. L., acting asst.-surgeon, granted leave of absence for ten days from Sept. 15, 1907.

Tuttle, Jay, acting asst.-surgeon, granted leave of absence for 16 days from Sept. 16, 1907.

BOARDS CONVENED.

A board of medical officers was to meet on the call of the chairman for the examination of an employé of the Life-Saving Service at Cape Charles, Virginia. Detail for the Board: Surgeon C. P. Wertenbaker, chairman, and Acting Asst.-Surgeon G. P. Moore, recorder.

A board of Medical officers was to meet at Fort Stanton, N. M., Oct. 3, 1907, for the examination of Pharmacist J. M. Bell, to determine his fitness for promotion to the grade of pharmacist of the second class. Detail for the board: Surgeon P. M. Carrington, chairman, and P. A. Surgeon L. D. Fricks, recorder.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Sept. 20, 1907:

SMALLPOX—UNITED STATES.

California: San Francisco, Aug. 25-31, 2 cases.
Colorado: 12 Counties, July 1-31, 65 cases.
Indiana: 12 Counties, July 1-31, 74 cases.
Kansas: 21 Counties, July 1-31, 76 cases.
Minnesota: St. Paul, July 1-31, 19 cases.
New York: Homer, Aug. 5-Sept. 6, 1 case; Syracuse, Aug. 7 Sept. 6, 1 case.
North Carolina: Greensboro, Sept. 1-7, 1 case.
Pennsylvania: Spring City, Aug. 19-Sept. 6, 1 case.
Vermont: Marshfield, July 15-Sept. 4, 6 cases.
Wisconsin: 30 Counties, April 1-June 30, 426 cases, 2 deaths; Milwaukee, Sept. 1-7, 2 cases.

SMALLPOX—FOREIGN.

Austria: Vienna, Aug. 18-24, 28 cases, 2 deaths.
Brazil: Para, Aug. 18-31, 25 cases, 19 deaths; Pernambuco, July 1-31, 225 deaths; San Paulo, July 28-Aug. 4, 1 death.
China: Shanghai, Aug. 1-8, 1 case (from U. S. S. S. *Pennsylvania*, from Cheefoo).
Colombia: Cartagena, to Aug. 27, present.
Canada: Halifax, Sept. 1-7, 1 case.
Ecuador: Guayaquil, Aug. 18-24, 1 death.
Formosa: General, Sept. 28-Aug. 3, 14 cases, 13 deaths.
Greece: Piræus, Aug. 18-24, 1 case.
Java: Batavia, Sept. 28-Aug. 10, 8 cases.
India: Bombay, Aug. 13, 1 death; Calcutta, July 27-Aug. 3, 9 deaths; Madras, Aug. 3-9, 1 death.
Italy: General, Aug. 12-29, 24 cases.
Madeira: Funchal, Aug. 26-Sept. 1, 5 cases, 1 death.
Mexico: Aguas Calientes, Aug. 24-31, 4 deaths: Mexico City, Aug. 4-10, 4 deaths; Monterey, Aug. 26-Sept. 1, 1 death.
Russia: Moscow, Aug. 11-17, 1 case, 2 deaths: Reval, July 1-31, 4 cases; St. Petersburg, Aug. 11-17, 1 case, 1 death.
Portugal: Lisbon, Aug. 18-24, 1 case.
Venezuela: La Guira, Aug. 25-31, present.

CHOLERA.

India: Bombay, Aug. 7-13, 38 deaths; Calcutta, July 21-Aug. 3, 401 deaths; Cochin, July 21-26, 8 deaths; Madras, Aug. 3-9, 6 deaths; Rangoon, July 28-Aug. 3, 1 death.
Japan: Moji, Aug. 15-21, epidemic; Nagasaki, Aug. 4-10, 3 cases; Shimonoseki, Aug. 4-10, 1 case (from S. S. *Hakaui Maru*, Aug. 10-21, epidemic); Yokahama, Aug. 1-17, 1 case.
Philippine Islands: Manila, July 26-Aug. 1, 1 case.
Russia: Archiersiski-Passelock, Aug. 19, present; Astrachan, Aug. 14, present; Ataman-Stanitza, Aug. 19, present; Samara, July 22-Aug. 5, 23 cases, 6 deaths; Saratov, July 16-Aug. 5, present.
Singapore: Straits Settlements, July 4-Aug. 3, 21 deaths.

YELLOW FEVER.

Brazil: Manaos, Aug. 3-17, 7 deaths; Para, Aug. 18-31, 8 cases, 8 deaths.
Cuba: Cienfuegos, Sept. 11-17, 11 cases, 3 deaths, total since recent outbreak to Sept. 17, 50 cases and 13 deaths: Habana, Sept. 10-14, 2 cases, 1 death (from Palos); Matansas Province: Bermeja, Sept. 10, 1 case, 1 death; Santiago Province, Gibara, Sept. 12, 1 case (from S. S. *Galveston*, from Guanto, Venezuela).
Ecuador: Guayaquil, Aug. 11-17, 1 death.
British West Indies: Trinidad, Port of Spain, Aug. 12-18, 2 cases, 2 deaths.

PLAGUE—UNITED STATES.

California: San Francisco, Sept. 11-17, 8 cases, 8 deaths; total number of cases from Aug. 12-Sept. 17, 29 cases, 17 deaths.

PLAGUE—FOREIGN.

Africa: King Williams Town, July 30-Aug. 1, 1 case, 1 death (from Dubois location); Izeli, June 23-Aug. 2, 6 cases, 6 deaths.
Chile: Arica, July 31-Aug. 6, 7 cases.
Brazil: Pernambuco, July 1-15, 2 deaths.
China: Amoy-Kulangsu, to Aug. 10, 25 deaths daily.
French Indo-China: Saigon, July 26-Aug. 1, 3 cases, 3 deaths.
India: General, July 7-13, 5,557 cases, 4,899 deaths; July 14-27, 3,995 cases, 3,335 deaths; Bombay, Aug. 6-13, 13 deaths; Calcutta, July 21-Aug. 3, 20 deaths.
Japan: Osaka, May 29-Aug. 3, 6 cases, 7 deaths; Yokahama, vicinity of, Aug. 4-21, 2 cases, 2 deaths.
Mauritius: July 25-Aug. 8, 1 case, 1 death.
Peru: Trujillo, Aug. 9-15, 3 cases, 1 death.
Philippine Islands: Manila, July 23-25, 1 case, 1 death (from German S. S. *Ferd Laiesz*).
Straits Settlements: Singapore, July 21-Aug. 3, 2 deaths.
Siam: Bankok, July 14-20, 2 cases, 2 deaths.

Marriages

DAVID H. LANDO, M.D., to Miss Ida Oberg, both of St. Paul, Minn., September 11.

FRANK C. GREENE, M.D., Chicago, to Mrs. Mattie May Smith, in Oswego, N. Y., in July.

ROGER S. MORRIS, M.D., to Mrs. Mary Bledsoe Carter, both of Baltimore, September 10.

I. H. LEVIN, M.D., Berwick, La., to Miss Rose Oppenheim, of New York City, September 19.

H. A. COBB, M.D., Dunlap, Iowa, to Miss Gertrude Holcomb, at Earling, Iowa, September 1.

STANLEY R. PERKINS, M.D., Mishawaka, Ind., to Miss Cora Etta Hill, of Chicago, September 11.

JAMES P. LANE, M.D., Cascade, Iowa, to Miss Mary Leyden, of Independence, Iowa, September 12.

WILLIAM C. HALL, M.D., Coffeyville, Kan., to Miss Nellie E. McCord of Golden, Ill., September 4.

JOHN H. CHARTERS, M.D., Boyne City, Mich., to Miss Nellie B. Hansen, of Flint, Mich., September 10.

WILLIAM FRIESLEVEN, M.D., St. Cloud, Minn., to Miss Anna Kremer of St. Paul, Minn., August 31.

JOHN DONNINGTON BARTLETT, M.D., Chicago, to Miss Edith Booker of Helena, Mont., September 4.

HAROLD HILL BAKER, M.D., Rochester, N. Y., to Miss Mabel Romer of Buffalo, N. Y., September 5.

WILLIAM S. NICHOLL, M.D., Rockledge, Pa., to Miss Margaret J. Knight, of Philadelphia, September 11.

JAMES H. BINDLEY, M.D., San Antonio, Texas, to Miss Isa McBean of New York City, September 7.

GEORGE W. BETSON, M.D., East New Market, Md., to Miss Ida Carke, at Laurel, Del., September 4.

EDWARD F. MALONE, M.D., Nashville, Tenn., to Miss Fay Hyson, of Hempstead, Md., September 24.

EUGENE J. HICKEY, M.D., Barnard, Vt., to Miss Alice Vivian Everett, of Burlington, Vt., September 11.

W. P. HANNA, M.D., Tappan, Ohio, to Miss Mary Florence Guyton of Winterset, Ohio, September 18.

FRANK EDWIN COULTER, M.D., Omaha, to Miss Annabel Manetta Fishback of Northfield, Minn., July 17.

EDWARD S. JOHNSTON, M.D., Mt. Auburn, Cincinnati, to Miss Alice Stuebing, of Cincinnati, September 25.

JOHN FRANCIS STEIN, M.D., to Miss Emma Kern, both of Cecil, Wis., at Shawano, Wis., September 10.

CHARLES U. AYDELOTT, M.D., Cincinnati, to Miss Margaret Kissick of Lewis County, Kentucky, recently.

CLAYTON MILO BROWN, M.D., Buffalo, N. Y., to Miss Evlyn Maud Haines of Mountsburg, Ont., September 11.

ROBERT HARPER, M.D., medical missionary to Burmah, to Miss Nellie Briggs of Oxford, Mich., September 6.

WARREN J. HOWARD, M.D., Roxbury, Boston, to Miss Lena Evelyn Everett, of Burlington, Vt., September 11.

GEORGE EDWARD KOONTZ, M.D., Salem, Va., to Miss Reba Ball Browning, of Pocahontas, Va., September 11.

EDWIN D. MOTEN, M.D., Winchester, Texas, to Miss Susie Annetta Whitlock of Lynchburg, Va., September 18.

CHARLES FITZGERALD, M.D., Hartford, Conn., to Miss Josephine Paula Schweiger, in New York City, September 4.

BYRON EDGAR GIANNINI, M.D., Coalmont, Ky., to Miss Margaret Frances May of Central City, Ky., September 25.

ALFRED M. SMITH, M.D., Hagerstown, Md., to Mrs. Margaret C. Bishop, at Shannondale Springs, W. Va., September 7.

W. BROWN WATSON, M.D., Brunswick, Md., to Miss Eva Katherine Mohler, at Summit View, W. Va., September 3.

R. RALPH FERGUSON, M.D., Irving Park, Chicago, to Miss Goldie Abigail Edgerton, of Hastings, Neb., September 17.

CHARLES STEWART MORRISON, M.D., Colorado City, Colo., to Miss Lillian Burnham of Woods Cross, Utah, September 12.

JOHN C. KIBLER, M.D., Elkins, W. Va., to Mrs. Brewster D. Duke, of Tarpon Springs, Fla., at Warren, Pa., September 7.

WILFRED GEORGE GRANDISON, M.D., Charlestown, Boston, to Miss Alice Maude Squire of West Somerville, Mass., September 3.

MICAJAH BOLAND, M.D., acting assistant surgeon U. S. Navy, Ft. Smith, Va., to Miss Elizabeth Sydnor Terry, of News Ferry, Va., at the U. S. Naval Hospital, Norfolk, Va., September 11.

Deaths

Patrick Livingston Murphy, M.D. University of Maryland School of Medicine, Baltimore, 1871; in 1879 assistant physician at the Western State Hospital for the Insane, Staunton, Va.; superintendent of the State Hospital for the Insane, Morganton, N. C., since 1882; one of the leading alienists of the South; a member of the Medical Society of the State of North Carolina and Burke County Medical Society; a Confederate veteran; some-time member of the Board of Medical Examiners of North Carolina; a director of the North Carolina School for the Deaf and Dumb; president of the Medical Society of the State of North Carolina, and an officer of the American Medico-Psychological Association; died at his home in Morganton, September 11, after an illness of several months, aged 58. By special order of the board of directors, Dr. Murphy was buried in an attractive location on the grounds of the State Hospital, September 12.

John Henry Jackson, M.D. University of Vermont College of Medicine, Burlington, 1865; a member of the American Medical Association; a delegate to the International Medical Congress in Berlin in 1890; professor of physiology in the University of Vermont since 1882; president of the board of directors of the Barre (Vt.) City Hospital; superintendent of the public schools of Barre in 1881 and 1882, and for many years trustee and treasurer of the Barre Academy; a member of the legislature in 1878 and 1879; in 1903 mayor of Barre; president of the Barre Savings and Trust Company, and vice-president of the National Bank of Barre; one of the most prominent practitioners and citizens of that portion of Vermont; died at his home, September 13, three days after an operation for appendicitis, aged 63.

Francis Hartman Markoe, M.D. College of Physicians and Surgeons in the City of New York, 1879; a member of the medical societies of the State and County of New York; Academy of Medicine; New York Pathological Society; New York Surgical Society, and the American Surgical Association; from 1880 to 1884 assistant demonstrator of anatomy, then demonstrator of anatomy, lecturer on clinical surgery and professor of clinical surgery, at the College of Physicians and Surgeons; one of the surgical staff of St. Luke's Hospital; consulting surgeon to the New York Hospital and Orthopedic Hospital, and attending surgeon at Bellevue and the New York Hospital; died at his home in New York City, September 13, from heart disease, after a prolonged illness, aged 51.

William G. B. Harland, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1890; a member of the American Medical Association; College of Physicians of Philadelphia; Philadelphia Pathological Society; the American Rhinological, Laryngological and Otological Society, and Philadelphia Pediatric Society; instructor in laryngology in the University of Pennsylvania; instructor in otology, Philadelphia Polyclinic; laryngologist to Phipps Institute for Tuberculosis, and laryngologist to the Philadelphia General Hospital; a prominent specialist on diseases of the ear, nose and throat, died in the City Hospital, Worcester, Mass., September 14, an hour after an operation for appendicitis, aged 38.

Charles Edwin Booth, M.D. Rush Medical College, Chicago, 1870; a member of the American Medical Association; superintendent of the Northern State Hospital for the Insane, Winnebago, Wis., from 1888 to 1891; a member of the legislature of Wisconsin from 1876 to 1877; chief surgeon, Lowmoor Iron Company, from 1892 to 1896; in charge of private hospital at Escanaba, Mich., from 1896 to 1901; district surgeon of the Chicago & Northwestern Railway from 1878 to 1885; at the time of his death surgeon of a turpentine manufacturing company at Gay, Fla.; died at the home of his brother in West Colesville, N. Y., September 9, aged 67.

Philip Bernhardt Krichbaum, M.D. Bellevue Hospital Medical College, New York City, 1893, of Sayville, N. Y., a member of the medical societies of the State of New York and Suffolk County, and of the Associated Physicians of Long Island, formerly health officer of the town of Islip; and local surgeon of the Long Island Railroad; surgeon of the S. S. *Gunther* of the Hamburg-American line, died at sea August 1, aged 35.

Albert S. Slater (Years of Practice, Ill., 1877); of Wataga, Ill.; a member of the Illinois State and Knox County medical societies; hospital steward and assistant surgeon in the Army during the Civil War; for ten years coroner of Knox County; for twelve years an alderman and for four terms mayor of Wataga; died September 11, at the home of his niece in Anderson, Ind., from kidney disease of long standing, aged 67.

Felix Nordemann, M.D. University of Berne, Switzerland, 1853; a member of the medical societies of the State and County of New York; founder of the German Medical Society in 1860, and in the early days of the municipal hospital a member of the advisory board of physicians; one of the best known German practitioners of New York City; died at his home, September 15, from heart disease, aged 79.

Edward P. Nichols, M.D. College of Physicians and Surgeons in the City of New York, 1851; assistant surgeon in the Army during the Civil War; a member of the Connecticut State and Middlesex County medical societies; for 20 years medical examiner of Killingworth, Conn., and at one time a member of the legislature; died at his home in Killingworth, September 3, from senile debility, aged 79.

Samuel Burnham Church, M.D. Bellevue Hospital College, New York City, 1864; a member of the Rhode Island State and Washington County medical societies; at one time town treasurer of Wickford, R. I.; a member of the school committee and superintendent of schools of North Kingston, R. I.; died at his home in Wickford, September 11, after an illness of a few weeks, aged 72.

William M. Yandell, Jr., M.D. Medical Department of the Tulane University of Louisiana, New Orleans, 1898; a member of the American Medical Association, and a well-known practitioner of Canton, Miss.; died at his home, September 9, from an overdose of morphin administered by himself, hypodermically, supposedly with suicidal intent, while despondent, aged 32.

James M. F. Brown, M.D. Royal Medical College, Belfast, Ireland, 1849; a resident of Roseburg and Portland, Ore.; for many years grand medical examiner for Oregon of the A. O. U. W., and at one time a professor in Willamette University; died at the Mary Johnson Sanitarium, Boise, Idaho, August 24, from cancer, after an illness of several months, aged 79.

William H. Abercrombie, M.D. New York Homeopathic Medical College and Hospital, New York City, 1872; surgeon U. S. Navy retired; formerly United States consul at Kobe and Nagasaki, Japan; died in his apartments in Washington, D. C., September 5, from gas asphyxiation supposedly with suicidal intent, due to mental depression, aged 62.

Gottfried Stamm, M.D. University of Berne, Switzerland, 1867; for many years consul for Switzerland for Minnesota, Montana, Wyoming and the Dakotas; from 1891 to 1894 a member of the Board of Education of St. Paul, died at his home in that city September 15, from cancer of the intestines, after a lingering illness, aged 64.

Nathaniel L. Gallaway, M.D. New York University Medical College, New York City, 1855; surgeon of the Forty-second Georgia Infantry, C. S. A., during the Civil War, and twice a member of the General Assembly of Georgia; died suddenly at his home in Monroe, Ga., September 1, from cerebral hemorrhage, aged 75.

Vernon Otis Taylor, M.D. Medical School of Harvard University, Boston, 1868; a member of the Rhode Island and Providence County medical societies; a practitioner of Providence, R. I.; died in the Rhode Island Hospital, in that city, September 10, from kidney disease, after an illness of two weeks, aged 65.

Obadiah H. Riggs, M.D. Long Island College Hospital, Brooklyn, 1888; formerly of Cincinnati, but for the last five years a practitioner of Kansas City, Mo., died September 11 from pneumonia following an injury received four days before, in which three ribs were broken and the lung was penetrated, aged 63.

John Sidney Dyer, M.D. Northwestern University Medical School, Chicago, 1905; after his graduation an interne in St. Luke's Hospital, Chicago, and later a practitioner of Poone, Iowa; died in St. Anthony's Hospital, Denver, Colo., August 31, from cirrhosis of the liver, after an illness of several weeks, aged 25.

Charles Burr Bridgham, M.D. Medical School of Maine, Medical Department of Bowdoin College, Brunswick, 1863; a member of the Massachusetts Medical Society and Norfolk County Medical Society and a veteran of the Civil War, died at his home in Cohasset, Mass., September 17, from nephritis, aged 66.

Almon W. Nicholson, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1873; a member of the Michigan State and Luce County medical societies; connected with the State Board of Health in the '80s; died at his home in Newberry, Mich., September 14, aged 63.

Byron E. Osborn, M.D. Albany (N. Y.) Medical College, 1854; of Auburn, N. Y.; a member of the Medical Society of the State of New York and the Cayuga County Medical Society; died recently in Rochester, N. Y., and was buried at Auburn, September 12.

John I. Clark (Examination, Ind., 1897); a member of the Gibson County (Ind.) Medical Society; a veteran of the Civil War, and a prisoner in Andersonville; died at his home in Owensville, Ind., in June, from paralysis, after an illness of three months, aged 72.

John Hancock, M.D. Berkshire Medical College, Pittsfield, Mass., 1847; assistant surgeon of the Fiftieth Massachusetts Volunteer Infantry during the Civil War died at his home in Holyoke, Mass., September 11, from senile debility, after a long illness, aged 86.

Electa B. Whipple, M.D. College of Medicine of Syracuse University, Syracuse, N. Y., 1884; a member of the American Medical Association, and of the Physicians' League of Buffalo, N. Y.; died at her summer home in Orchard Park, September 13, aged 59.

Frederick Calvin Wolf, M.D. University of Maryland, School of Medicine, Baltimore, 1866; a member of the medical societies of the State of Pennsylvania and Adams County; died at his home in East Berlin, Pa., from pneumonia, September 8, aged 68.

George W. Benedict, M.D. College of Physicians and Surgeons in the City of New York, 1878; a practitioner of South Norwalk, Conn., and once postmaster of that city; died at Westport, (Conn.) Sanitarium, August 23, from nervous disease.

Walter E. Songer, M.D. St. Louis (Mo.) College of Physicians and Surgeons, 1890; a member of the American Medical Association and superintendent of the Illinois Asylum for Insane Criminals, Chester, died at that institution, September 18.

Alexander Adler, M.D. University of California, Medical Department, San Francisco, 1903; after his graduation an interne at the German Hospital, San Francisco; died in that city, August 31, after an illness of five weeks, aged 26.

D. S. Maddox, M.D. Louisville (Ky.) Medical College, 1884; formerly coroner of Marion County, Ohio, and a practitioner of Marion; died in Columbus, September 10, from nervous exhaustion, aged 46.

Albert Lewis Mahaffey (Examination, New Mexico); for several years physician at the Indian School, Albuquerque, N. M.; died at a hospital in Chicago, September 1, from cancer, aged 60.

F. V. Frankenstein, M.D. American Medical College, St. Louis, 1890; died at his home in Epiphany, S. D., August 29, from an overdose of carbolic acid, taken by mistake, aged 70.

James W. Mershom, M.D. Physio-Medical College, Cincinnati, Ohio, 1876; died at his home in Des Moines, Iowa, September 10, from dropsy, after an illness of several months, aged 55.

Russell Thomas Barry, M.D. Rush Medical College, Chicago, 1902; died at the home of his parents in Chicago, September 12, from tumor of the brain, after a brief illness, aged 26.

James F. Duffie, M.D. Medical College of the State of South Carolina, Charleston, 1859; a Confederate veteran; died at his home near Blackstock, S. C., September 7, aged 72.

Thomas Brunskill, M.D. University of the Victoria College, Coburg, Ont., 1869; died September 2, at his home in Kew Beach, Toronto, from heart disease, aged 62.

John Bender, M.D., an eclectic practitioner of Lansing, Mich., for fifty-eight years, died at his home September 8, after an illness of one week, aged 90.

William H. Abbitt, M.D. Medical College of Virginia, Richmond, 1853; died at his home in West Appomattox, Va., September 13, aged 75.

Dwight M. Coonley, M.D. Michigan College of Medicine and Surgery, Detroit, 1903; died at his home in Detroit, August 30, aged 63.

Allen Heald, M.D. Eclectic Medical Institute, Cincinnati, died at his home in South English, Iowa, August 15, aged 78.

William Bracken (License, Ind., 1897), died recently at Greensburg, Ind., aged 90.

Deaths Abroad.

E. Hitzig, M.D., until recently professor of psychiatry at Halle, eminent by his works on the physiology and pathology of the brain, died at a summer resort, August 20, aged 69.

E. De Lavarenne, M.D., one of the founders of the *Presse Médicale* of Paris, in 1893, died August 19, aged 55.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, CONTRACT PRACTICE, INSURANCE FEES, MEDICAL LEGISLATION, ETC.

The Harm of Contract Practice.

In the August *Wisconsin Medical Journal* appears an article on contract practice by Dr. W. F. Zierath of Sheboygan. He thinks the question is of special interest to the young practitioner who knows nothing of the trials about to confront him and who thinks that the perplexities of diagnosis and treatment constitute his real difficulties. Notwithstanding careful preparation, the young practitioner finds the number of his patients in inverse ratio to his expectations. On investigation, he learns that various fellow-practitioners are under contract with corporations, lodges and fraternal societies to treat the employés, or members, or even the whole families of members at a ridiculously low price.

Dr. Zierath defines contract practice as the payment of a certain fixed compensation for an indefinite amount of professional services, and discusses, in particular, lodge practice, or contract work for fraternal societies. "This form of evil," he says, "is a constantly growing one, and is rapidly invading all classes of society, especially the middle class, special societies being organized all over the country, which make it their business policy to obtain medical service at an excessively low rate." He instances, in this particular, the Order of Eagles, which furnishes medical service for the entire family of a member for an annual fee of $2. At their annual elections there are usually several applicants for the appointment of lodge physician, who in their anxiety to receive this appointment, sometimes resort to all the petty schemes and subterfuges of political ward leaders.

Dr. Zierath points out that fees in general are to-day the same as those received by physicians forty years ago, in spite of the fact that the cost of living has greatly increased in the last ten years, and that the cost of medical education and the running expenses of the physician are much greater than they were twenty years ago. Another factor is that the medical profession is overcrowded and that cheap, ill-equipped institutions are annually graduating hundreds of students, many of whom, in the struggle for existence, are forced to accept exceedingly low fees.

The results of contract practice are considered from three viewpoints, the effect on the physician himself, on the profession and on the public. The effects on the physician are that he is looked on with suspicion by his patients and his capabilities are regarded slightingly, owing to the fact that he is willing to work for an amount so far below that demanded by his colleagues for similar services. The patient knows that the physician has already received his compensation and that it is in no way dependent on the quality of service rendered. He, therefore, prejudges and is convinced beforehand that the physician is going to shirk his duty and that he will do as little as possible. This lack of confidence on the part of the patient is fatal to proper cooperation and understanding between the patient and the physician. The incentive to study and self-improvement on the part of the physician is lacking. All his time is occupied in making hasty calls on his contract patients. As his services can not cost the individual more than the specified amount, he is sent for repeatedly, in cases in which, under ordinary circumstances, a physician would not be called. The expectation of obtaining surgical and obstetric cases through lodge contracts generally results in disappointment. The young physician who takes a contract as a lodge physician is working directly against his own best interests. Such an arrangement does not increase the reputation of the physician either with the public or with the profession. The majority of physicians who have the welfare of the profession and the public at heart are earnestly opposed to contract and lodge practice and are, consequently, disposed to criticise the physician who enters into such a relation.

As to the effect of lodge practice on the profession, Dr. Zierath emphasizes the dissension and strife, instead of the harmony and cooperation, which results from such methods. The respect of the public for the profession is lowered. Constant dissension, charges of unethical conduct, etc., decrease the influence of the profession with the public. The general tendency of contract practice is to lower fees and to place professional services on a purely commercial basis. The abolition of contract practice results in more even distribution of the professional work of the community, thus leading to greater equality of income, more time for study, recreation and graduate work.

The most pernicious effects of contract practice, however, are those borne by the public. Under such a system, the quality of medical services deteriorates inevitably. Working men and heads of families are given inadequate and unsatisfactory care and treatment, as a result of which lives are sacrificed unnecessarily and wage earners are incapacitated for a greater length of time than would be the case if they received proper medical attention. This results in loss of wages, wasting of savings, increase of the number of dependents, and reduction of wage earning capacity. As a result of shaken confidence in the physician, the patient or his friends are often led to place their lives and health in the hands of quacks and charlatans, with increasing loss of both health and money.

The remedy proposed by Dr. Zierath is simple and effective; it is simply for the reputable members of the profession, through organized action and effort, to refuse to participate in or sanction this form of contract practice. In some cases this requires some personal sacrifice, but Zierath truthfully says: "The individual must sink his selfish interests in the welfare of the whole profession. He must be made to understand that what is now, to him, possibly a source of small profit will eventually react to his own detriment and to that of the whole profession. If some, for purely selfish reasons, will not act in harmony with the majority, let that not deter the majority from action. Let the best element in the profession refuse to do contract work and let the public know that their action is based on justifiable grounds."

Dr. Zierath's article is well worth reading as a careful and dispassionate consideration of a question which has always been a vexing one and which is rapidly becoming vital. Contract practice, in different forms, has been considered in these columns a number of times. The question is one admitting of much discussion and requiring fair-minded and impartial investigation in order to differentiate the various forms of contract practice and to point out the peculiarities of each. As to lodge practice, the particular form of contract practice considered in Dr. Zierath's article, there is practically no room for argument. It is pernicious and injurious to both the physician, the profession, the individual patient and the public. It has no excuse for existence, except as a means of revenue to the middleman, who, whether as an individual or as an organization, farms out the physician by buying professional services at wholesale and selling them retail. A physician who engages in such practice is simply sacrificing his professional character and his own future for the sake of a very slender temporary income. Such commercializing and prostituting of the practice of medicine should be condemned by the organized profession in no uncertain terms and the condemnation should carry with it adequate penalties for violation.

Reorganization in New Hampshire.

The Transactions of the New Hampshire Medical Society for 1907, just received, contain an interesting report of the one hundred and sixteenth session of this body. The secretary, Dr. D. E. Sullivan, says in his report: "It can be safely stated that, thanks to reorganization, there exists in New Hampshire to-day, a more compact union of physicians than ever before, and if no further results are apparent, or even expectant, the results now at hand are such as fully to warrant a more glorious anticipation of success for this society."

The committee on revision of the constitution reported that it had decided to submit the first report, made three years ago and embodying the idea of component county societies. After mature consideration, this report was adopted and the committee instructed to revise the constitution and by-laws dur-

ing the coming year so as to eliminate any contradictions or incongruities. The appointment of a committee on medical defense and the adoption of resolutions on contract work have already been mentioned in this department.

Insurance Notes.

Insurance resolutions protesting against the reduction of life insurance examiners' fees and pledging the society to the support of the Kentucky resolutions, have been adopted by the Polk County (Tenn.) Medical Society and the Cumberland Valley Medical Association.

The following companies are now paying the $5 rate for life insurance examinations:

Etna Life of Hartford, Conn.
American National Life of Galveston, Texas.
Citizens Life of Louisville, Ky.
Capital Life of Denver.
Colorado National Life of Denver.
Ft. Worth Life of Ft. Worth, Texas.
Guarantee Life of Houston, Texas.
Pacific Mutual Life of San Francisco.
Southwestern Life of Dallas, Texas.
State Mutual Life of Rome, Ga.
Southern States Life of Atlanta, Ga.
Manhattan Life of New York.
Massachusetts Mutual of Springfield, Mass.
Mutual Benefit Life, Newark, N. J.
Mutual Life, of New York.
National Life, Montpelier, Vt.
Northwestern Mutual Life, Milwaukee, Wis.
Reliance Life, Pittsburg, Pa.
Connecticut Mutual Life, Hartford, Conn.
Provident Life and Trust Company, Philadelphia.
Commonwealth Life, Louisville, Ky.
Boston Mutual Life, Boston.
Citizens Life, Louisville, Ky.
New England Mutual Life, Boston.
Pacific Mutual Life, Los Angeles, Cal.
Equitable Life of New York.

The Polk County (Tenn.) Medical Society at its last meeting adopted a resolution providing that no life insurance examination should be made by its members for less than $5. A resolution was also adopted providing that no member of the society should act as an assistant to any physician or surgeon engaged in club practice.

Society Proceedings

American Public Health Assn., Atlantic City, Sept. 30-Oct. 4.
Medical Assn. of District of Columbia, Washington, Oct. 1.
American Roentgen Ray Society, Cincinnati, Oct. 2-4.
Idaho State Medical Society, Boise, Oct. 3-4.
Delaware State Medical Society, Wilmington, Oct. 8.
Nevada State Medical Society, Reno, Oct. 8-9.
Mississippi Valley Medical Association, Columbus, O., Oct. 8-10.
Medical Assn. of the Southwest, Hot Springs, Ark., Oct. 8-10.
Vermont State Medical Society, St. Johnsbury, Oct. 10-11.
Kentucky State Medical Association, Louisville, Oct. 15-17.
Assn. of Military Surgeons of the U. S., Norfolk, Va., Oct. 15-18.
American Association of Railway Surgeons, Chicago, Oct. 16-18.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Twentieth Annual Meeting, held at Detroit, Sept. 17-19, 1907.

The President, DR. ROBERT T. MORRIS, New York, in the Chair.

Officers Elected.

The following officers were elected for the ensuing year: President, Dr. E. Gustav Zinke, Cincinnati; vice-president, Dr. John W. Keefe, Providence, R. I., and Dr. W. A. B. Sellman, Baltimore; Secretary, Dr. William Warren Potter, Buffalo, re-elected; treasurer, Dr. X. O. Werder, Pittsburg, re-elected.

Baltimore was selected as the place for holding the next annual meeting, Sept. 15-17, 1908.

Preservation of the Resistance of the Patient.

The president, Dr. Robert T. Morris, New York, in his address, said that the surgical patient is a factory, whose business it is to manufacture phagocytes and opsonins for destroying bacteria. The new idea is to avoid disturbing this factory in such a way that it can not manufacture phagocytes and opsonins. The dominant idea in surgery to-day began with the studies of Pasteur and Semmelweis, formulated by Lister, and continued by scientists of all countries for the purpose of removing by the artifices of the surgeon, the bacteria which cause disease. Exactly opposed to this is the new idea of letting a patient manage his own bacteria, while the surgeon should let patients alone. There are many ways for preventing this factory from manufacturing its full complement of phagocytes and opsonins, and among them he mentioned long-continued operations, extensive operations, free handling of viscera, tissues, and long-continued anesthesia. He referred to the importance of rapid operating, and said that surgeons should cultivate rapidity of action to the point that the average abdominal operation shall require not more than fifteen minutes for its completion from beginning to end.

Toxemia of Pregnancy as Observed by the Gynecologist.

DR. RALEIGH R. HUGGINS, Pittsburg, stated that observations lead to the belief that pernicious vomiting, acute yellow atrophy and eclampsia are but the results of conditions which, as a rule, have gradually developed. The onset may be severe enough to seriously impair the process of metabolism and thus render the patient more susceptible to many other complications which frequently accompany pregnancy and the puerperium. That many dangerous complications are liable to develop after delivery as a result of previous toxemic conditions is a fact that has not received the attention which its importance merits. There is much greater danger of infection at delivery as a result of lowered resistance than when the eliminative organs have been functionating normally throughout pregnancy; in a number of cases of cholecystitis occurring during pregnancy and the puerperium it has developed in the presence of toxemic symptoms, and complications such as cholecystitis and empyema of the gall-bladder have been the direct result of an overworked liver caused by the toxins of pregnancy. A large percentage of cases of insanity occurring during the puerperium give a history of toxemic symptoms previous to delivery.

DISCUSSION.

DR. E. GUSTAV ZINKE, Cincinnati, said that he is satisfied that puerperal toxemia can be eliminated in nine-tenths of the cases. These women should have the necessary care from the beginning of their pregnancy until the end of it, until they are able to be up and about after their confinement. This is what the young practitioner should be taught; this is what practitioners should teach to the public.

DR. JOSEPH PRICE referred to a prominent young woman who developed diabetes during pregnancy and the question arose as to whether it was safe for her to bear a child. He was called to settle that point. He decided that the woman could safely conceive. She was watched with great care by a physician, a man of great skill, who made high application of the forceps, and delivered her of a child who is now alive.

DR. WILLIAM H. HUMISTON said that in the severe cases that have resisted other methods of treatment he has had good success from the use of stomach lavage, twice daily, with rest in bed and enemas of salt solution.

Ophthalmia Neonatorum: A Pathologic Anachronism.

DR. F. PARK LEWIS, Buffalo, N. Y., by invitation, delivered an address in which he pointed out the importance of securing the enactment of laws in each state giving to boards of health supervisory control and licensure of midwives, requiring the latter to be examined and registered in each county, and to report immediately each case of ophthalmia occurring in their practice, under penalty of fine and forfeiture of license. Health boards should distribute circulars to midwives and mothers, giving instruction as to the dangers, method of infection, and prophylaxis of ophthalmia neonatorum. He urged the appointment of committees by the various state and county societies, whose cooperation will make concerted action possible.

To Aid in Prevention of Ophthalmia.

The association appointed a committee to consider the question of ophthalmia neonatorum, and subsequently the committee submitted the following resolution, which was adopted:

Resolved, That it is the expression of the sentiment of this association that definite steps should be taken to secure the

enactment of such laws in the various states as shall compel the use of proper measures of ophthalmic prophylaxis by the attendant at every confinement, the execution of such laws to be under the jurisdiction of the state boards of health, and we hereby pledge our assistance and cooperation to the committee of the American Medical Association in its undertaking.

(*To be continued.*)

INTERNATIONAL DERMATOLOGIC CONGRESS.

Sixth Meeting, held in New York City, Sept. 9-14, 1907.

MONDAY AFTERNOON SESSION.

(*Continued from page 1050.*)

American Vice-President, DR. EDWARD L. KEYES, SR., in the Chair.

Propcsals to Diminish the Diffusion of Lepra and Its Treatment.

PROF. R. CAMPANA, Rome, Italy, said that a mutual understanding should be arrived at among civilized nations concerning the treatment of this disease. Local treatment, he said, is necessary in leprosy in the initial stages of macular and tubercular symptoms. These can be arrested by radical surgical treatment, followed up by cauterization. The most rigorous aseptic and antiseptic treatment of the ever varying lesions is indispensable, according to the manner in which they are developed in the patients, and this is especially the case in the latter stages of the disease.

DISCUSSION.

DR. D. W. MONTGOMERY, San Francisco, recalled the case of an Irish woman, who was first in New York and then went to San Francisco. Her husband had been in Ireland and also went to San Francisco. Their children were not lepers, but she was a well-marked leper. Dr. Montgomery knew that he would find another leper, and it was learned later that she had harbored in her house a patient from Hawaii.

DR. WALTER R. BRINCKERHOFF, Honolulu, T. H., said that in Hawaii the disease had been controlled by segregation. For such control of the disease it was necessary to have it generally disseminated among the people the idea that the disease is to be treated in a systematic way. The general belief among them is that when they go to leprosaria they go to be neglected and to die. They should be informed as to what can be done for them to make them more comfortable.

PROF. R. CAMPANA, Rome, Italy, said that the bacillus is present in the beginning of the disease. After a while it is found in cultures, but after a time disappears entirely.

DR. ISADORE DYER, New Orleans, said that he believes that the bacillus of leprosy becomes attenuated with the production of different types of the disease. The observation of the large number of cases in Havana showed this. Of over 200 cases there were but 12 or 15 cases of tubercular type. In Louisiana, since 1894, they have had altogether 240 patients under observation. There have been 50 or 60 patients always at the leper home. Isolation apparently reduced the number greatly. In the new cases the patients seldom show evidences of acute leprosy, i. e., leprosy of an acute macular type. Sunshine, good water, hot-water baths, regulation of the diet, at the end of two or three years showed some results. In some cases in five, six, seven or eight years the disease was removed by treatment.

DR. PRINCE A. MORROW, New York, said tnat he believes it is impossible to say whether the bacillus that escapes in the advanced stages of tubercular leprosy is alive or dead. It would mean a warfare against the tuberculous if they attempted to isolate the cases in the early stages, simply because the disease can not be detected in the large proportion of the cases. It is a matter of general knowledge that leprosy may exist five, ten, fifteen and even twenty years without positive evidences on the skin in the shape of manifestations in the nerves that can be recognized by the physician. That is the reason why we can not exclude leprosy from this country. It should not be taught that leprosy is an incurable disease. Dr. Morrow said he had cured at least two cases, the patients going without symptoms for at least ten years.

DR. WILLIAM T. CORLETT, Cleveland, said that he recently visited a leper hospital with 260 inmates, and he was impressed by the fact that there was not a single instance in which an attendant became infected during 35 years.

DR. H. RADCLIFFE-CROCKER, London, said that he knew a woman, 40 years old, who contracted the disease in mild form and who was under observation eight or nine years; she practically made no progress in the wrong direction. He has also seen two cases of the tubercular variety, both patients being treated with chaulmoogra oil. He believes the prognosis in the tubercular cases is largely a question of whether they are able to take adequate doses of the oil.

DR. BURNSIDE FOSTER, St. Paul, says that the Scandinavian lepers are able to recognize the disease in the beginning, and are able to conceal the disease. Many of these cases remain undetected for a good many years.

The Treatment of Leprosy with Perforation and Cauterization.

DR. JOSÉ VIÑETA-BELLASERRA, Barcelona, Spain, said that lepers are subject to febrile attacks of varying severity and duration. These attacks were pointed out by the physicians of the middle ages. The fever frequently is so slight that the patient pays no attention to it. In other cases the body is shaken by severe chills, and there is a considerable rise of temperature. Frequently a sudden and severe fever makes its appearance, accompanied by infections, digestive disturbances, etc., which threaten the patient's life, coinciding with the infiltration and suppuration of the leprous tubercles. When the symptoms are demonstrated he takes the fine point of a galvanocautery and proceeds to the perforation and thermic cauterization of all the tissues invaded by the germ of leprosy. As regards the general condition of the patients, they are built up in the first place by good food and tonics, especially the sulphate of quinin. Chaulmoogra oil is administered in large doses.

The Treatment of Leprosy and of the Microbic Dermatoses with the Products of the Basilian Flora.

PROF. EGAS MONIZ BARRETO DE ARAGAO, Bahia, Brazil, presented this communication.

Treatment of Lupus Vulgaris with Béraneck's Tuberculin.

DR. A. LASSUEUR, Lausanne, Switzerland, said that the results previously obtained by others with Koch's tuberculin, and those obtained with Béraneck's tuberculin, would seem to justify them in assigning a part to this specific treatment in the therapeutics of lupus vulgaris. The favorable results obtained with Béraneck's tuberculin in the treatment of the surgical tuberculoses encouraged them to employ this same tuberculin in the treatment of lupus.

Cutaneous Tuberculosis in the City of Mexico.

DR. JESUS GOZALEZ URUEÑA, City of Mexico, said that among 5,268 skin patients treated in the *Consultorio Central de Beneficiencia Publica*, in Mexico, from Feb. 9, 1905, until April 20, 1907, there were 42 cases of cutaneous tuberculosis. It is noteworthy that in Mexico, a city situated at an altitude of 2,222 meters (7,221 feet) above the sea level, with a sky almost always blue and a very bright sun, lupus erythematosus (tuberculoid) is far more common than lupus vulgaris (tubercular). It should likewise be noted that the ulcerative, gnawing, destructive forms of the latter are practically unknown in Mexico.

The Nature and Treatment of Lupus Erythematodes.

PROFESSOR CAMPANA, Rome, and DR. G. LANZI, Rome, presented this paper. Dr. Lanzi puts forth the theory that different predispositions, due to chronic infections, may occur and constitute a great part of the cause of the disease. With this opinion, they are justified in affirming a useful therapeutic principle which has certainly the merit of practicability and considerable foundation in experience. The conclusion is that with old means and methods they may go wrong, if guided only by the idea that in the treatment of lupus mercury has proved beneficial or curetting has proved beneficial, without discriminating when and why. On the other

hand, distinguishing according to the basis of the etiologic predisposition, we can proceed to operate, or to apply mercury with evident and precise reasons. A third remedy has been recently mentioned by Fox, Jackson and Lüstgarten, namely, small continued doses of sulphate of quinin.

Recent Research on the Subject of Papulovesicular Eczema.

DR. L. BROCQ and DR. G. AYRIGNAC, Paris, France, said that the term papulovesicular eczema is applied to a pathologic condition characterized from the objective point of view, and as a primary elementary lesion, by a papular vesicle of small size, but very distinctly marked in the locations where it forms on the healthy skin. Based on analysis of clinical facts, they had determined long ago the fact that the leading part in the genesis of papulovesicular eczema is played by the accidental intoxications, the autointoxications, the shocks sustained by the nervous system. This special point was studied clinically. Fourteen patients were selected, in whom the diagnosis was positive, the type of the eruption being perfectly pure. Three hundred consecutive analyses of the urine were made in these cases. In 80 per cent. of the cases there was a notable diminution of the renal probability, and in 90 per cent. of the cases there was a considerable increase of the intestinal fermentations.

Complementary Deviation in Gonorrhea and Skin Diseases.

DR. R. M. MILLER and M. OPPENHEIM, Vienna, Austria, stated that the serum of patients having gonorrhea invariably contains circulating substances which may be demonstrated by means of the method of complementary deviation. These were first demonstrated by them in the serum of a patient who had died from gonorrheal arthritis. The serum of certain individuals has in itself an inhibiting influence on the hemolysis. The vast majority of these sera are derived from cases of psoriasis.

Methodical Scraping as a Diagnostic Method in Certain Dermatoses.

DR. L. BROCQ, Paris, France, gave in detail the information obtainable by this method. Two points were insisted on: 1. The importance of the degree of serous exudation thus ascertained, from the point of view of the prognosis and the treatment to be instituted. 2. The importance, from the diagnostic point of view, of the traumatic purpura produced by the scrapings.

Value of an Absolutely Vegetarian Diet in Psoriasis.

DR. L. DUNCAN BULKLEY, New York, read this paper, in which he offered the following conclusions: 1. The cause of psoriasis is as yet unknown. Many facts point to its not being a purely local disease of the skin. 2. Psoriatic patients often appear to be in perfect health, but metabolic disturbances can generally be discovered by complete quantitative urinalysis. 3. The error is generally along the line of faulty nitrogenous metabolism and diminished excretion of the purin products. 4. Long observation shows a decided increase of eruption with excessive meat eating. 5. Marked improvement in the eruption occurs, under the same treatment, when a strictly vegetarian diet is faithfully carried out. 6. Continued strict vegetarian diet is often attended with freedom from eruption, and relapses are often directly traceable to dietary errors in this direction.

DISCUSSION.

DR. H. RADCLIFFE-CROCKER, London, said that he recalled the case of a young girl, 13 years old, who had well-marked psoriasis, and who was naturally a vegetarian, never having taken the smallest piece of meat in her life. If the initial lesion could be thoroughly treated, one might cure the disease. He believes the disease to be microbic in the beginning. He did not agree with Dr. Bulkley that the disease is primarily one of metabolism.

TUESDAY, SEPTEMBER 10.—MORNING SESSION.

Vice-President, DR. H. RADCLIFFE-CROCKER, London, in the Chair.

The morning session began with an exhibition of patients and a formal discussion on the same.

Pathology of the Brown-Tail Moth Dermatitis.

DR. E. E. TYZZER, Boston, said the exact date of the introduction of the brown-tail moth into this country is unknown, but it was first noted in large numbers in 1897, in one of the suburbs of Boston. This species has since spread throughout the greater part of New England, and has also penetrated adjacent territory. It has been shown that the dermatitis which is produced by these insects is due to very minute, sharp-pointed, barbed hairs, the "nettling hairs," which develop on the caterpillar. On experimentation with the nettling hairs, it is found that when they are mingled with a drop of blood a peculiar reaction takes place which serves as an index of their toxicity. The toxic principle is removed from the hairs by dilute alkalis and by water heated to 60 C., but it is insoluble in other common reagents. It is, however, quite resistant to heat and withstands baking for one hour at 110 C., but is destroyed by baking at 115 C.

DISCUSSION.

DR. JAMES C. WHITE, Boston, said that these caterpillars always produce a widespread dermatitis. There is no geographic limitation to the progress of the disease.

Trauma as an Etiologic Factor in Skin Diseases.

DR. NEUBERGER, Nuremberg, Germany, emphasized the importance of trauma as an etiologic factor in skin diseases.

DISCUSSION.

DR. JOSEPH ZEISLER, Chicago, said that the relation of syphilis to trauma was pointed out long ago. Whether traumatism is able to produce a disease like psoriasis is a question; before this is settled many observations will be necessary.

DR. A. RAVOGLI, Cincinnati, said that he believes trauma calls attention to a disease already existing in the body, as, for instance, a tuberculous knee following traumatism, or an injury to the knee being followed by an infiltrated gumma. Trauma should be more studied as an etiologic factor in diseases of the skin.

Idiopathic Multiple Hemorrhagic Sarcoma (Kaposi).

DR. M. B. HARTZELL, Philadelphia, said that the number of recorded cases of this disease is now something over 100. The number of cases reported in America is extremely small, and, for this reason, he reported in detail a new and typical case occurring in native-born Americans. The disease is practically limited to the legs and feet. The treatment consisted in the local use of antipruritic lotions and the internal administration of arsenic in fairly large doses by the mouth and the use of the *x*-ray. Improvement followed in all parts exposed to this treatment.

DISCUSSION.

DR. H. RADCLIFFE-CROCKER, London, said that only the Polish Jews are seen in England with this condition.

PROF. ERICH HOFFMANN, Berlin, Germany, discussed the paper in German.

DR. SCHIELDS, Cincinnati, said that he has observed five cases of this disease with Kaposi in 1892-1893. One case was of particular interest. The patient had an extensive involvement of the legs and developed a temperature of 40 C. The patient died and a section of the lesion showed that the infiltrating cells had entirely disappeared.

DR. STEVENS, Detroit, said that two years ago he had a similar case at Ann Arbor. An old man, 72 years old, developed multiple idiopathic hemorrhagic sarcoma five years before, after a visit to Denver. He was an American.

DR. SAMUEL SHERWELL, Brooklyn, said that in 1886 he published a paper in which he claimed good results from the use of arsenic.

DR. M. B. HARTZELL, Philadelphia, said the question still remains as to whether this was a sarcoma or something else.

Multiple Benign Cystic Epithelioma.

DR. M. L. HEIDINGSFELDT, Cincinnati, said that it is evident that multiple benign cystic epithelioma presents many clinical and pathologic variations. Walter Pick states that the clinical variations are marked, but the histologic picture is so characteristic and marked as to permit both the diagnosis and differential diagnosis. The relation of these cases to malig-

nancy has already received careful consideration and his personal experience in the pathology of multiple benign epithelioma is a confirmation of Fordyce's, and he is frank to state that the advanced lesions of multiple benign cystic epithelioma not only show evidences of malignant change, but he has been able to find a parallel for them in every pathologic phase and form in the clinical lesions of early pre-malignant change in the skin.

DISCUSSION.

DR. M. B. HARTZELL, Philadelphia said that the two diseases, multiple benign cystic epithelioma and adenoma sebaceum, are closely alike, and any pathologic changes are due to an abnormal increase in the epithelia, in both instances, in the region of the hair follicles.

Skin Diseases in the Negro.

DR. HOWARD FOX, New York, said that he has been enabled to make a comparative study of 4,400 cases of skin diseases, half of them in the negro and half in the white race. He concludes that: 1. In spite of the fact that the negro is more susceptible to disease in general than the white man, and that his mortality is twice as great, he suffers less frequently and less severely from diseases of the skin. 2. The negro skin is decidedly less susceptible to external irritants. 3. The full-blooded negro is almost immune to ivy poisoning. 4. Acne is less common and much less severe in the negro. Rosacea is a rare and very mild affection. Eczema is perhaps not less frequent, though certainly less severe. Psoriasis in the full-blooded negro is very uncommon. 5. Tuberculosis of the skin is not more common in the negro in spite of the great prevalence in this race of pulmonary and other forms of tuberculosis. 6. Syphilis is certainly more common in the negro than in the white. A tendency to the annular syphilide as well as to keloid, elephantiasis and fibroma, deserve to be classed as a racial peculiarity of the negro. 7. The negro is more subject to new growths of connective tissue origin and less so to those originating in epithelial structures. Cutaneous epithelioma is very rare in the full-blooded negro. 8. The mucous membranes as well as the skin are less susceptible to disease. 9. Many of the rarer forms of skin disease are observed in the negro. 10. Mulattoes are more susceptible to skin diseases than negroes, being especially prone to chloasma.

DISCUSSION.

DR. ISADORE DYER, New Orleans, commended the paper. He said that the social conditions of the negro in the South are so different from those of the North that any statistics he might give would be of little value in the study of skin diseases in the negro. The negro does not apply for treatment unless there is some complication which is either disfiguring or causes suffering. The observation is made that perhaps the only malignant type of syphilis seen in New Orleans occurs in the negro.

DR. JOSEPH GRINDON, St. Louis, said that there are 40.000 negroes in his city and their study is beset with difficulties. The first question in studying the relative frequency of skin diseases would be, "What is a negro?" Should they be limited in their study to the pure negroes and the pure whites? In his personal experience syphilis is a more severe disease in the negro than in the white.

(*To be continued.*)

OHIO STATE MEDICAL ASSOCIATION.

Annual Meeting, held at Cedar Point, Aug. 28-30, 1907.

(*Continued from page 1052.*)

Hemorrhage of the Bladder with Subsequent Paralysis of That Organ for Three Months.

DR. JOHN G. ALBERS, Fulda, reported a somewhat remarkable case of a man, aged 88, in whom a diagnosis of chronic cystitis and ulceration of the vesical mucous membranes, with enlargement of the prostate, was made. The patient improved under treatment, but after taking a long walk, he had bloody urine. After vigorous treatment the patient's pain was relieved, but retention of urine supervened for three months. Electricity was used over the whole area of the bladder; flushing the rectum with hot water, massage of the prostate gland and suppositories every night constituted the treatment. At the end of three months the patient was able to void his urine and is now in good health. Dr. Albers thinks it reasonable to presume that ulcers of the vesical mucous membranes had caused erosion of its vessels and consequent bleeding, or even that the enlarged prostate might have proceeded to suppuration, broken, and discharged blood and pus into the bladder.

DISCUSSION.

DR. GOODHUE emphasized the importance of cystoscopic examination before operating, as these troubles are usually due to carcinoma, papilloma or polyp. The cystoscope will show whether or not the growth is malignant, and will tell the number and location of tumors.

DR. RANKIN said that not all cases are of hemorrhage of the bladder or caused by foreign bodies therein. He spoke of the use of extract of logwood, an old and practically forgotten remedy.

DR. LOWER, Cleveland, said that of 115 cases under his observation, in 65 the bleeding was from the bladder, and in 50 from the kidney. In a number of cases tuberculous ulcers caused considerable bleeding, and in one case simple ulcer. In 75 per cent. of cases of hematuria the condition was painless and with no symptoms to locate the exact source of the hemorrhage. It is often impossible to find it without the aid of the cystoscope.

DR. KURTZ related the history of a patient brought to him for cystoscopic examination; there had been bleeding for months. He found a badly congested trigone. He washed the bladder with boracic acid solution before and after the use of the cystoscope, and the next day the bladder was better. Acting on that suggestion he washed out the bladder daily and the hemorrhage ceased entirely. There has been no return in six months.

DR. BUNTS spoke of the many cases in which there is no growth, but which are essential hemorrhages of the kidney. It means nothing but hemorrhage without discoverable cause. The possibility of nephritis must be borne in mind in cases of painful hemorrhage, and medical attention should be given on that line.

The Diagnostic Significance of Acute Abdominal Pain.

DR. C. D. KURTZ, New Philadelphia, stated that the great majority of these cases have been diagnosed by one physician and another as "bilious attacks," "indigestion," "gas in the stomach," or "neuralgia of the stomach." He emphasized the fact that the majority of cases of severe acute abdominal pain in the adult are due to some serious lesion. In the young child the opposite is true, as most cases of acute pain are due to intestinal colic, the result of indigestion. In seventeen years' work he has not seen a case of acute gastralgia that was not due to gallstones, inflammation of the bile ducts or gastric ulcer, with the exception of those cases of crises due to locomotor ataxia. He differentiated the symptoms arising in appendicitis, in which the location of the pain is not always an index to the seat of the trouble; perityphlitis, which without appendicitis is of rare occurrence; acute cholecystitis, perforating gastric ulcer, acute inflammation of the gall bladder and ducts; acute intestinal obstruction; the so-called Dietl's crisis in movable kidney; renal colic; acute pancreatitis; the twisting of the pedicle of an ovarian or dermoid cyst; rupture of ectopic gestation; perforation of the intestine by typhoid ulcer; acute cystitis, prostatitis and vesical calculus. In acute pelvic inflammation the location of the pain in the hypogastric and pubic regions should suggest an examination of the pelvic organs. Pneumonia, pericarditis and pleurisy may cause pain in the abdomen. Arteriosclerosis of vessels in the splanchnic area will sometimes cause attacks of pain in the upper abdomen. Acute lead poisoning, arsenical poisoning and intestinal colic due to acute indigestion were mentioned, and he concluded

with the importance of making a careful examination in every case of acute abdominal pain.

DISCUSSION.

DR. SMITH, Cincinnati, mentioned, in addition to the symptoms noted by Dr. Kurtz, the reflex pain from trouble in the vertebral column.

The Suppression of Fraudulent Advertising.

DR. D. R. SILVER, chairman of the Ohio League for the Prevention of Fraudulent Advertising, presented an excellent report of the league. The association was formed at the meeting of the Ohio State Medical Association at Canton, in May, 1906, and consisted of about ten members, subsequently increased to about thirty. The avowed object of the league is to enlist the medical men of the state, especially those interested in church work, in a protest against the use of religious publications by the American Proprietary Association for the furtherance of the schemes of fakirs and charlatans. The smallness of the committee and the meager fund necessitates concentration of effort on one point. The General Assembly, or great authoritative court, of the Presbyterian Church, which convened in Columbus, and its 600 delegates and other attendants to the number of 1,000, representing every state in the Union and many foreign countries, afforded an excellent opportunity for the work of the league. In order to instruct these people several hundred reprints were distributed among them, of the articles by Samuel Hopkins Adams, issued by the press of the American Medical Association, also copies of "The Great American Fraud." As a result, six presbyteries expressed themselves in unmistakable terms, declaring they would refuse endorsement to church publications which refused to comply with the request. The results are that the *Herald and Presbyter* is to-day entirely clean. A personal letter from the editor says: "We shall try to keep our paper free of fraudulent advertisements, medical, and all other kinds." The *Interior* of Chicago has but one such advertisement, and the publisher says that the contract will not be renewed when it expires. The conquest of these two great journals in one year may be regarded as a very great victory, and other papers of this denomination must now fall in line in self-defense. The league can now pass on in its work to other denominational papers, but whether it does so or not depends entirely on the support it receives at the hands of the profession, and judging from the work in the past year the executive committee feels justified in expecting this support. The executive committee, through Dr. Silver made a plea for general professional cooperation in this work, and as religious journalism is only a small part of its work, the real fight begins when the secular papers are attacked. It is almost useless to do this without education of the people, which can be done most effectively by the little book referred to—"The Great American Fraud," and by organization along the lines planned by the Public Health Defense League. This is an age of reform, and men will no longer tolerate exaggeration, fraud and deceit in the conduct of business. Trusts and corporations which propose to prey on the diseases and weakness, physical and mental, of suffering humanity will find themselves opposed by equally effective organization—the public Health Defense League—which has inscribed on its banner the words: "Onward for honesty, sobriety and truthfulness."

The Fallacy of Osteopathy.

DR. DANA O. WEEKS, Marion, prefaced his concluding remarks on the "Fallacy of Osteopathy," by quoting Justice Field of the Supreme Court at Washington, D. C. (the highest tribunal in this country), in giving the unanimous opinion of the Supreme Court as follows:

> Few professions require more careful preparation by one who seeks to enter it than that of medicine. It has to deal with all those subtle and mysterious influences on which health and life depend, and requires not only a knowledge of the property of vegetable and mineral substances, but of the human body in all its complicated parts, and their relations to each other, as well as their influence on the mind. The physician must be able to detect readily the presence of disease, and prescribe appropriate medicine for its removal. Every one may have occasion to consult him, but comparatively few can judge of the qualifications of learning and skill which he possesses. Reliance must be placed on the assurance given by his license that he possesses the requisite qualifications. Due consideration, therefore, for the protection of society may well induce the state to exclude from practice those who have not such a license, or who are found on examination not to be fully qualified. No one has the right to practice medicine without the necessary qualifications of learning and skill.

The theory of the osteopath, Dr. Weeks contends, is based on the presumption that there is some anatomic defect in each individual who has morbid symptoms, yet the great majority of osteopaths are not well educated even in anatomy, as is evidenced by the experience of physicians with them. Osteopathy of itself will not cure any known disease, and while it may be useful in selected cases as a part of physical therapy, like massage, Swedish movements, Delsarte, etc., there is no more reason to dignify the physical movements which they use as a "pathy" than to dignify the masseur and others who use a physical treatment by some "pathic" suffix. Dr. Weeks considers it evident that the simultaneous flood of osteopathic bills is the result of a well-planned effort to secure in each state legislation which will give the individual osteopath all the privileges of a member of the medical profession while expressly stating that he is not practicing medicine. The bills provide for unlimited and practically universal reciprocity, and also permit the board to substitute a variety of other qualifications for the educational requirements, thus allowing the licensing of practically any one whom the board may wish to license. The bills provide for a separate board of osteopathic examiners and an examination before licensing, but with so many exceptions as practically to nullify the examining features.

The Medical Fee Bill.

DR. WILLIAM B. PATTON, Springfield, Ohio, after paying due consideration to the altruistic side of the profession and the practice of the individual members, asked consideration to the premise that it is time for every county society in the state to adopt and live up to a modern medical fee bill, simply for the purpose of uniformity and for the purpose of having something tangible for physicians to show their patrons or a court of justice if need be what is the usual and accepted standard of fees in the community. In June, 1906, the county society adopted a bill whereby the minimum fee for a house visit is $1.50 and for an office call 75 cents. Signatures of the members were secured to this bill, a plate thereof made, and now in practically every physician's reception room will be found a copy of the bill with *fac simile* signatures of members of the local profession. Referring to our relations to the clergy, Dr. Patton sums up his opinion: "The preacher who receives his medical services free of charge is expected to pay by using his influence in his church and community for the physician who rendered the service. The preacher who thus prostitutes his calling and the physician who attempts to get business by dangling to the coat tails of a preacher are about on a par, and neither of them is any great credit to two of the noblest callings of God among men." At a meeting of the Hamilton County Society a grievance committee was appointed to whom all complaints of violation of the fee bill shall be referred for investigation, and while it is too early to know what such a committee will accomplish, the very fact that it exists ought to have a tendency to stiffen the backbones of some of the weaker brethren.

Comparison of Homeopathy of Hahnemann with the Homeopathy of To-day.

DR. CHARLES H. HIGGINS, Zanesville, after a brief biographical sketch of Samuel Hahnemann, compared briefly the homeopathy of Hahnemann's time with that of to-day. Hahnemann gave inappreciable doses at long intervals, while modern homeopathy gives appreciable doses for palliative effect and gives small doses frequently repeated. Hahnemann ignored pathology, while modern homeopathy recognizes pathology and teaches it in its colleges; it also recognizes material cause of disease, teaches bacteriology and microscopy, and makes use of modern serotherapy. Hahnemann did not believe in specific medication, except as prophylactic, like belladonna for scarlet

fever. Modern homeopathy believes in specific medication to a certain extent, *i. e.*, belladonna for scarlet fever, modifying its course, preventing complication and protecting against infection. Bryonia is considered a specific for pneumonia if given early enough. Arsenic, copper and veratrum album are believed specifics for cholera, calcarea carb. for rickets, hepar sulphur for boils, etc. Hahnemann based his medication on the totality of symptoms, never giving drugs for the "antipathic" effect on a single symptom, while modern homeopathy usually bases its medication on the totality of symptoms, but frequently gives drugs for antipathic effect, such as morphin for pain. Also Hahnemann did not give tonics, while modern homeopathy gives tonics liberally. Hahnemann believed in the efficacy of vaccination as a preventive and alleviator of smallpox, while modern homeopathy advocates either giving potentized vaccine matter internally or the use of vaccination.

What the Profession May Do in Matters of State.

DR. J. MORTON HOWELL, Dayton, after considering the relation between theology and medicine, said that it is inspiring to those who believe in the Bible to find after the lapse of almost 2,000 years, in the greatest medical department or hospital, and perhaps in the world (Johns Hopkins), a statue of Christ, with the inscription at the base "The Great Physician." He believes this statue to be the protection of the sentiment and belief of the entire profession. After referring to the element of suggestion as employed in Christian science and osteopathy, Dr. Howell criticised the action of a United States Senator from Ohio for his assistance rendered toward the passing of a special law measure entitling osteopathy to a special consideration in the District of Columbia; and also for his attitude on the Food and Drugs Act and other legislation. In reference to quack doctors, nostrums, etc., he submitted the following measures for consideration by the legislative committee of the State Association:

He proposed a measure, suggesting that it be made a misdemeanor to cause to be inserted or printed, whether in press or by circular or otherwise, misleading and deceptive statements regarding the cure of disease. He urged on physicians the duty of taking an active interest in matters of state, instancing the part taken by physicians in France, and after eulogizing the services rendered to the cause of legislation on medical matters in the public interest by Dr. C. A. L. Reed, chairman of the Bureau of Medical Legislation of the American Medical Association, he suggested his nomination for United States Senator to succeed Charles Dick, on the expiration of his term, and called on the medical profession to rally to his support. Dr. Howell touched on needed legislation regarding the prevention and spread of tuberculosis and venereal disease, on marriage licensing, etc., and said that he looks forward to the time when communicable disease will be entirely under control and medical practice confined to prophylaxis and physiologic therapeutics.

The Rarity of Gastric Disease.

DR. R. C. CABOT, Boston, said that many general diseases, and many local diseases originating outside the stomach, produce what are called gastric symptoms, although the stomach itself is sound, and hence, are to be cured, not by local treatment of the stomach, but by treatment directed to these extragastric causes—especially bad habits in neurasthenia. The grounds of these are: 1. The negative results of physical and chemical examination in a large number of cases at the Massachusetts General Hospital during the past ten years, in which gastric symptoms have been the chief complaint. 2. The favorable results of treatment, based on an attempt to better the patient's general condition and mental equilibrium, without any effort at local gastric treatment. 3. The demonstration that lesions of other organs can produce symptoms closely simulating those of local gastric disease. 4. The critical study of the local causative factors. Distinctly better results are obtained when we give up to a great extent the reliance on pepsin, HCl, anitfermentative drugs, and gastric sedation, and treat the patient with two main objects in view: The maintenance (a) of his nutrition and (b) of his courage. Forced feeding may have to be resorted to to accomplish the first, and to effect the second, it may be necessary to become the patient's friend and advisor, in matters so far afield from medicine as his love affairs, his financial worries, or his religious beliefs. Among the diseases which are responsible for many supposed cases of gastric trouble are phthisis, arteriosclerosis, angina pectoris, cholelithiasis and others. Most of the causes of gastric troubles given in the text-books occur much more frequently without causing result than with. From these facts Cabot argues that if we leave out cancer, ulcer and obstructed dilatation, the causes of digestive anomalies are not to be found in local insults or local failures of the stomach.

Cooperation of the Profession and the Lay Public in Public Health.

MR. CHAMPE ANDREWS deprecated the hitherto prevailing pessimism and referred to the beginning of a new school of political economy and philosophy, represented by Professors Patten, Irving Fisher, J. P. Norton and Russell H. Chittenden, the basis of which is a political economy, substituting for the history of the strong man trying to capture for himself the means wherewith to lead in an economic system that does not provide enough for everybody, that of a world where there is a surplus instead of a deficit, and where, when just methods of distribution of the surplus have been worked out, there will be more than enough for everybody, and consequently, time now occupied in the struggle for existence can be diverted to a development of the finer qualities of human nature. This school is constantly emphasizing the supreme fact that the greatest asset of a nation is the health of its people, and from this standpoint springs the necessity of the medical profession joining hands with the people to effect a common object. Mr. Andrews then referred to the origin and history of the public health defense league, and to the development of the work of the medical societies in New York State, in enforcing public health legislation. Public health laws will never be properly enforced until public opinion demands their enforcement, and the education of the public can not be accomplished by the physicians alone. The Public Health Defense League arose in answer to the demand for a society in which the doctor and layman can work side by side. Some of the ends of the league are the conquering of all forms of quackery, food adulteration, fraudulent sale of narcotics and alcohol, indecent and fraudulent medical advertisements, and the establishment of a national health bureau, together with other various steps tending to public enlightenment, on matters of public health.

Interdependence of Diseases of the Eye, Ear, Nose and Throat.

DR. JOHN E. WEEKS, New York, urged the necessity of a broad knowledge of general medicine, preceded by a liberal non-medical education, as the foundation for a superstructure of specialization in medicine. Disturbances of the eye and its adnexa, due to disease of the nose and its accessory sinuses, are common. Obstruction of the lachrymal duct, rhinitis, syphilis, tuberculosis, pemphigus, influenza, deviated septum, polypi and foreign bodies in the meatus, all are liable to produce eye symptoms, while reflex ocular symptoms not infrequently develop from infections of the nose. The relation of diseases of the ear to diseases of the eye is less intimate, as is also that of infections of the pharynx and larynx. With regard to the relation between the presence of adenoids and hypertrophied tonsils, and phlyctenular conjunctivitis and keratitis, Weeks is somewhat uncertain, but he states that in his experience children suffering from phlyctenular conjunctivitis or keratitis, often suffer from adenoids and hypertrophied tonsils, and recover rapidly as a rule, after the adenoids and tonsils have been removed.

Doses of Diet and Drugs.

DR. A. JACOBI, New York, pointed out that Nature is not inaccurate in her dosage. He admitted that nothing is better thought out than percentage feeding, but considered that, in its logical persistence, nothing is more fallacious, unnecessary or injurious. There is no equality or uniformity, either in cow's milk or woman's milk. Wherefore he considers that the mixed milk of a herd is safer than that of an individual cow

may turn out to be. The persistent uniformity of the constituents of meals is a source of ill results. The infant's stomach is an organ endowed with physiologic freedom, not a test tube with chemicals of inalterable rules. With regard to the intervals between feedings, Jacobi says that every new text-book copies from the previous one, the rule of a meal every two hours for the newly born, and he asks why not two and a half or three hours? Altogether we feed too much and too often, both in health and disease. When he wishes to save cholera infantum babies, Jacobi practices what he practiced and taught fifty years ago, e. g., starving half a day, giving nothing for another half a day, except farinaceous waters, frequently in small quantities, then beginning with milk mixtures containing only 10 per cent., or with raw egg albumin mixtures, which do not add to intestinal putrefaction and intoxication. Milk skimmed by centrifuging in cases of moderate severity will be preferable to milk. After food has been refused in cholera infantum for a number of hours, teaspoon doses, one every five, ten, fifteen or twenty minutes, should be given. Jacobi considered the practice of adding cream to cow's milk incorrect. Babies thrive better on much less fat. He cited the experiences of the first of the four formulas supplied in Chicago, which contains only fat 1.5; milk sugar, 5; proteids, 0.5, on which little ones thrive with few diarrheal disorders. Asses' milk owes its value in digestive disorders to the fact that its fat percentage is low, as is also the case with buttermilk, the food of Holland's peasant babies, which contains only from 0.5 to 1 per cent., a surplus of indigestible fat undergoes decomposition in the intestinal tract. Babies digest but little fat. He deprecated the addition of milk sugar, notwithstanding the laboratory deductions of the professional pediatric journal contributor for the calcium phosphate in the serum, which keeps the casein of milk in solution, is decomposed by an excess of lactic acid, the result of milk sugar metabolism. He cites Sacherich and Finkelstein as supporting him in the avoidance of milk sugar, and the preference for plain sugar. He also recommends the addition of salt to the food of both the sick and the well. The addition of water is also required, for some 10 or 12 per cent. of the weight of an infant is lost within a week, as the result of excretion of large quantities of water, by the lungs, kidneys and skin. Many babies cry because they are thirsty, not hungry. If what they are given the first day or two is not pure water, the food should be diluted with water five or six times its quantity. Later dilution of milk should be as 1 to 3, the first month, 1 to 2 later, 1 to 1 at six months. There need be no fear of dilatation of the stomach. The amount of water to be given can not be told with accuracy, the baby will tell when he has had enough. Offer as much as he will take frequently. Jacobi considered the use of cereals, which some people decry, advantageous, for the transformation of starch in the sugar within a very few minutes in the mouths of babies has been well proved. Starchy foods act as an antifermentative in the bowels, authorities to the contrary notwithstanding, while albuminates, with occasional exception of egg albumin, are apt to cause intestinal putrefaction. Jacobi recommends one-half tablespoonful of barley, or when there is a tendency to constipation, oatmeal, slowly boiled in a quart of water down to a pint, with the addition of a little salt. Five parts of this, to one part of cow's milk, for the newly born. After a month, perhaps four parts; after two months, three parts; after three months, two parts; at six months one part. Flour of the whole barley should be used. If it is not obtainable, grind pearl barley in the coffee grinder. Jacobi concluded that if it were necessary the dilution of heated cow's milk with gelatin decoction is more digestible than cow's milk alone.

In regard to drugs, he cautioned against accepting the dicta of the text-books. Statements made in books, magazines and papers are copied and recopied. "When a mistake has been made a thousand times, we call it experience, and when it has been printed a thousand times and copied and read, it is called scientific truth." Take, as an example, the general statement that opium should not be given to babies and that the dose of the drug to be given to a baby of half a year or a year must be 1/20 or 1/15 of that of an adult person, or much less if the drug be an opiate. Yet for 54 years he has treated thousands of babies with enteritis in different forms, stopping the diarrhea, with 1/3 or ¼ of a grain of Dover's powder every two hours, with chalk or bismuth, subcarbonate or subgallate. He has never seen a case of opium poisoning of his own making. It would not be safe, on the contrary, to give adults fifteen or twenty times the dose he has used for a baby, repeating it every two hours. The author considered in detail the dosage of belladonna, calomel, corrosive sublimate, tincture of iron perchlorate, potassium chlorate, digitalis, spartein, camphor, caffein and strychnin.

The Enlarging Field of Opsonic or Bacterial Therapy.

DR. A. P. OHLMACHER, Detroit, supplemented his previous reports on Wright's method of bacterial therapy, with further experience, which, to his mind, assures for the new procedure a wider range of usefulness than that originally outlined by Wright and his followers. He referred to cases of puerperal infection, eczema, pruritus vulvæ, psoriasis, pyorrhea alveolaris, acute and chronic otitis media, rheumatoid affections, and even inherited defective immunity, under his own observation, successfully treated by bacterial therapy.

Medicolegal

Duty of Injured Person with Regard to Adhesions.

The Supreme Court of Rhode Island says that in the personal injury case of O'Donnell vs. Rhode Island Company, it was contended by the defendant that adhesions existing around the shoulder joint could be relieved by forcible rupture and manipulation—a process so painful as to require the administration of an anesthetic—and, further, that it was the duty of the plaintiff to submit to such an operation and so diminish the amount of damages. Much evidence was introduced to the effect that such an operation was not sure to be effectual, and might cause other harmful results. The trial court, in answer to a question of the jury, intructed them: "I can not advise you that it is the duty of the plaintiff, to undergo as a matter of law, to submit herself to etherization. It is a matter to be judged in the light of what a reasonable person would do. She must do all that a reasonable person would do to minimize those damages, and if you are of the opinion that a reasonable person would submit to be put under ether to have the arm manipulated, and that that would restore it in a period of three months, then I say to you it is her duty to do it. It is not her duty to do it, unless, in your opinion, that result would be accomplished; that to submit to that operation, putting herself under ether, for the purpose of breaking down those adhesions, and restoring the complete function of the arm, was such a thing that a reasonable person would do. It comes down to the question, in my view of the case, to whether a reasonable person would submit to it. She must do all that a reasonable person would do to reduce her injuries as much as possible, not only in the future, but she must have done it in the past; and, if there is evidence that shows that her claims of injuries have been increased (of the evidence, of course, you, gentlemen, are the judges), for such increase and her negligence, the defendant would not be liable. But, if she puts herself in the hands of the physicians and follows their advice, then the defendant would be liable, even though the physicians themselves lack in skill or may err in judgment." The Supreme Court thinks this instruction was correct. It cites Hooper vs. Bacon, 101 Me. 533.

Tuberculosis Patient at Sanitarium "Confined to the House" Under Insurance Policy—Throat Trouble.

The Court of Appeals of Maryland holds, in the case of Dulany vs. Fidelity and Casualty Company of New York, that a requested instruction that there was no evidence in the case legally sufficient to show that tuberculosis ever necessarily confined the plaintiff to the house was erroneous. It says that his insurance policy undoubtedly limited the disability from disease provided for by it to such as necessarily confined him to the house.

The expression "confined to the house" in the present case was used in a policy which on its face undertook for a consideration to insure against disability caused by diseases, not therein excepted (and consumption did not appear by the record to be excepted) for the obvious purpose of describing the duration of the period for which the insured, when totally disabled by disease from discharging the duties of his occupation, should be entitled to draw a weekly indemnity. That purpose, the court thinks, would be fully accomplished by construing "confined to the house" to mean confined to any part of the house, either inside of the doors or on the porches or verandas attached to it on the outside.

Furthermore, the court holds that the jury were erroneously instructed as matter of law that the failure to mention in the application for the policy the fact that the applicant had at different times within the prescribed period received medical attention for throat trouble constituted a breach of warranty material to the risk insured against relating to illness. The materiality of representations made in an appplication for a policy of insurance is ordinarily a question for the jury. The plaintiff testified, on cross-examination, that for five or six years he had a clearing of his throat, and during one winter had gone about once a week to a physician to have his throat and nostrils sprayed to get rid of it. He had also suffered now and then from a cold in the head, and had had the grip over three or four years before the trial, for which he had been treated by a physician. There was also testimony by his family physician that he had a chronic throat condition which is common to nine-tenths of the people in Baltimore, where what is known as a "throat climate" prevails, and that medical treatment is not ordinarily resorted to for that trouble, but that the plaintiff was rather prone to consulting physicians. The court does not think that the case fell within the class where the materiality of the representations were manifestly material to the risk, as here the only medical testimony appearing in the record as to the nature of the insured's throat trouble tended to prove that it was trivial and unimportant.

Valid Classification and Exceptions in Medical Practice Act.

The Court of Appeals of Maryland holds, in Watson vs. State, that the provision of the medical practice act of that state under which physicians who were practicing in the state prior to Jan. 1, 1898, and who were practicing at the passage of that act, and could prove by affidavit that within one year from that date that they had treated in a professional capacity at least twelve persons, should be exempt from the requirement to obtain a license, is not an unreasonable and arbitrary discrimination or classification forbidden by the fourteenth amendment to the Constitution of the United States. It says that the object sought to be accomplished by this law is to protect the public against incompetent and ignorant practitioners of medicine, while at the same time protecting actual practitioners of medicine against arbitrary and unreasonable exclusion from the practice of their profession. The law deals with that class of the people who have adopted and are engaged in the practice of the profession of medicine, and who are dependent on it for the support of themselves and their families, and with that other and larger class to whom competent medical practitioners are essential for the preservation of their health. These two classes are recognized classes, and each is entitled to consideration in framing the law.

In Dent, vs. West Virginia, 129 U. S. 21, the Supreme Court of the United States upheld a law which exempted from examination and license all physicians who had practiced medicine in that state continuously for ten years. The period of practice required under the Maryland statute under consideration at the time of its passage was a little more than four years, and that law has now been in force five years. If it was within the discretion of the legislature to fix a ten-year period, it was equally within its discretion to fix a four-year period, since the Supreme Court has said the legislature has a wide latitude in dealing with such classifications. To justify the striking down of such a classification it must be "obviously arbitrary," and must be shown "not to rest on some difference which bears a reasonable and just relation to the act—the thing—in respect to which the classification is proposed." This was not shown. On the contrary, re-examination of the authorities and a careful reading of the briefs convinces the court that the law is not open to this objection.

Nor does the court think the law unconstitutional because of the provision that nothing contained in the subtitle pertaining to practitioners of medicine should be construed to apply to: 1, Those rendering gratuitous services; 2, resident or assistant resident physicians or students at hospitals in the discharge of their hospital or dispensary duties, or in the office of physicians; 3, physicians or surgeons from another state or territory, when in actual consultation with a legal practitioner in this state; 4, to commissioned surgeons of the United States Army or Navy, or Marine-Hospital Service; 5, chiropodists; 6, to midwives; 7, to masseurs or other manual manipulators, who use no other means; 8, to physicians or surgeons residing on the borders of a neighboring state, and duly authorized to practice under its laws, and whose practice extends into the limits of the state, but not so as to permit them to maintain an office in this state. It thinks that it should be sufficient to say that they all come, in the court's judgment, within the wisdom and discretion of the legislature.

Manufacturing Company Not Liable for Continued Treatment of Person Injured on Its Premises.

The Supreme Court of Rhode Island says that the case of Burton vs. Fletcher Manufacturing Company was brought to recover the value of certain professional services as a physician and surgeon, rendered by the plaintiff for the defendant. The facts disclosed that one Charles S. Bray, a person not in the employ of the defendant, was injured on its premises; that the telephone of the defendant was used for the purpose of summoning the plaintiff, a physician; that the plaintiff rendered the necessary first aid to the injured person; that an ambulance was called, and in it the patient was removed. For all that was brought to the attention of the defendant, the services of the plaintiff ended there. Mr. Bray, it appeared, was seriously and severely injured, and his departure in the ambulance was as consistent with his removal to a hospital as it was to his being taken to his home.

The plaintiff received notice, either from the superintendent or acting superintendent, that the patient was not an employé of the defendant. If the notice came from the superintendent, as the plaintiff said, it was within a few days of the date of the injury; and if it came from the acting superintendent, as testified to by him, it was on the occasion of the first visit made by the plaintiff.

The justice presiding on the trial instructed the jury that the defendant was not liable for the continued treatment of the patient after giving notice that he was not their employé. To this ruling exceptions were taken.

The Supreme Court overrules exceptions to these instructions, holding that a verdict was properly directed for the defendant. It says that after the departure of the injured man from the premises of the defendant in the ambulance, if the plaintiff had intended to treat the patient at the expense of the defendant, it was his duty to inform the defendant of that fact, to the end that there might have been such a meeting of minds on the subject as would constitute a contract. The plaintiff, however, elected to remain silent on the subject, not only for months, but for years, although he had been previously instructed by the defendant, in another case, to render monthly statements of his services when rendered in its behalf; and when he finally brought his suit it was more than six years after the time when the defendant had notified him that Bray was not in its employ. There was evidence that there was no express contract, and there was no evidence, in such circumstances, from which a contract could be implied in favor of the plaintiff.

Medical Practice Act and Procedure Sustained.

The Supreme Court of Pennsylvania, in the case of Commonwealth vs. Clymer, affirms, on the opinion of the Superior Court, a conviction of practicing medicine without a license. The opinion referred to holds that the act of May 18, 1893, is not unconstitutional on the ground that the subject of

legislation is not clearly expressed in the title. The particular objection was that the title gives no notice of the provision, contained in the fourteenth section, making a violation of any of the provisions of the act, especially those relating to practicing medicine or surgery without license and registration, a misdemeanor punishable by fine. But it is answered that, inasmuch as the subject of legislation, as expressed in the title, is the examination and licensing of practitioners of medicine and surgery, and the further regulation of the practice of medicine and surgery, any one would naturally suppose, from reading the title, that the act not only provided for the licensing of such practitioners, but declared the consequences of practicing without complying with its provisions.

The admission of the testimony of a statistical clerk, who assisted in keeping the records of the medical council and the state board of medical examiners, that he had examined them, and could not find the name of R. S. Clymer therein, was not prejudicial error, even though this mode of proving the contents of the record was open to objection. According to the doctrine of Commonwealth vs. Wenzel, 24 Pa. Superior Ct. 467, and in view of the state of the record produced from the prothonotary's office, it was not incumbent on the commonwealth to prove that the defendant had no license.

The record produced from the office of the prothonotary, taken in connection with the uncontradicted testimony of the deputy, showed that none of the papers exhibited by the defendant for the purpose of registration was a license issued by the medical council of Pennsylvania, and no such license was produced on the trial, or was proved, and its non-production accounted for. Moreover, in the affidavit filed by the defendant with these papers, the clauses of the blank relative to the exhibition of a license issued by the medical council, and to compliance with the provisions of the act of 1893, were all erased, thus showing that the defendant was careful not to assert that he had any such license, or that he had complied with the provisions of the act. In view of these facts the judge was justified in expressing to the jury his opinion as to what the verdict should be.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York.

September 14.

1 *Account of the Destruction of Mosquitoes in the Original Infected District in the New Orleans Epidemic of 1905. T. D. Berry, U. S. P. H. and M.-H. S.
2 *Intercurrent Typhoid Fever in Surgical and Renal Cases. G. F. Lydston, Chicago.
3 *Nutrition a Factor in Tooth Development. W. J. Lederer, New York.
4 *Phthisiotherapy by Means of Emulsion of Bacilli (Koch). W. Meyer, West Hoboken, N. J.
5 Morphinism. C. J. Douglas, Dorchester, Mass.
6 *Flatulence and Its Treatment. M. Einhorn, New York.
7 Removal of Large Thyroid Tumor of Neck. J. H. Wells, Pyengyang, Korea.
8 Cancer of the Head of the Pancreas. D. B. Allen, New York.

1. **Yellow Fever in New Orleans.**—Berry relates in an interesting fashion the measures undertaken during the epidemic of yellow fever in 1905, for the extermination of the mosquito. The problem of destruction of mosquitoes was met by a repeated fumigation of the houses, and the use of currents of live steam under high pressure, sprayed through a nozzle on vines, rubbish piles, etc. The unemployed theatrical bill posters proved immensely useful with paste and brush in closing up arch ways, leaky sheds, outhouses and even semi-closed places, passage ways. The agents used were sulphur, pyrethrum and tobacco; the first was burned in 10- and 12-inch skillets; pyrethrum was unsatisfactory; tobacco was ineffectual. Great tact was displayed in employing a sprinkling of Italians among the workers, one in each gang being interpreter. The education they thus received made them valuable missionaries. To avoid damage to many articles and furnishings that would be injured by sulphur fumes in the parlors of the better class, the room was first searched for objects such as flower vases that might contain water, and the room prepared as for fumigation by sealing, the door closed and sealed on the outside. On the termination of the case, and after complete fumigation of the rest of the house, this room could be opened in confidence that no mosquitoes had survived, for these insects can not exist without water for over three or four days. Mosquito traps were found to be useless. After all damagable articles had been removed and the cracks pasted up or chinked with cotton to make everything tight, a rough estimate of the cubic capacity of space was made and two pounds of sulphur to a cubic foot were ignited. The effect of the fumigation was shown by spreading a sheet over the floor in front of one window, all the other windows being darkened. Driven from their hiding places by the fumes, the mosquitoes flew toward the light until they fell asphyxiated on the sheet. "Afterward it was enough to convince the most skeptical doubter of the mosquito doctrine to see in a room where a patient had just died of the fever a dozen or two female stegomyias, dead on the sheet, with their abdomens in various stages of distension from the blood of the late patient, and to know the products of the absorption of this blood would have been duly injected into some one else's system had not the mosquitoes been arrested in their career." That the female stegomyia of sufficient age to transmit yellow fever works almost entirely by night, is shown by the fact that over 100 non-immunes working in the worst infected houses for eight hours daily had a morbidity of only 3 per cent., in no case attributable to daytime infection.

2. **Typhoid in Surgical Cases.**—Lydston records three cases, emphasizing the importance of being continually on the alert for medical complications, in cases primarily of a strictly surgical character. In the first case typhoid complicated a renal colic hematuria; in the second inguinal hernia and perineal section for bladder drainage; and in the third an acute primary nephritis.

3. **Nutrition and the Teeth.**—Lederer considers the effect of nutrition on the development of the teeth, and urges, among other things, insistence on mother's milk, when obtainable, and avoidance of carbohydrates and other foodstuffs, prior to the eruption of the temporary teeth. Milk should be the principal food for 18 months, starchy food should be withheld for about a year.

4. **Phthisiotherapy.**—Meyer tabulates 25 cases of pulmonary tuberculosis treated by means of Koch's emulsion of bacilli, which cases lead him to formulate the following conclusions:

1. An early diagnosis gives the greatest assurance of an early permanent cure (tuberculin being the means of such diagnosis).
2. The selection of cases has a direct bearing on the results; far-advanced cases are generally hopeless and second-stage cases doubtful.
3. A cure is possible by means of tuberculin, but the permanency of such cure is *sub judice* at present.
4. The dose is to be guarded in order to avoid reaction of a severe type and the intervals between the injections should be regulated according to reaction.
5. No ill effects have followed large doses, even in the beginning of the treatment; but it is advisable to give small doses, since the larger doses may cause symptoms which alarm both patient and physician.
6. In fever cases very minute doses have a tendency to reduce temperature; 3 of the 25 cases have acted that way.
7. Bacilli usually increase in number at first, and cough may be more severe for a time, but the improvement is early and rapid.
8. Under tuberculin the weight increases and the general condition improves, the symptoms disappear, and the patient feels in every respect better; this naturally pertains only to certain well-chosen cases.
9. These observations have conclusively shown that patients while remaining at home and at work can take the tuberculin treatment and receive a great deal of benefit from it.

6. **Flatulence.**—Einhorn classifies flatulence as (1) primary, (2) more frequently associated with other ailments. Clinicians have now convinced themselves that flatulence may exist without any serious consequences for a long time. In most instances there is no real augmented fermentation of the food. Often belching is explained as the result of swallowing air. In ischochymia, in which there is almost always undue fermentation and decomposition of food, patients do not suffer much from belching of gas. An increase in the formation of gas is encountered in acute and chronic gastric catarrh. Habit plays an important part in this trouble; when asleep or when the attention is actively occupied, belching is not liable to occur. The need for it occurs when the thoughts turn to the vegetative functions, but there is no necessity to respond to the temptation. In primary flatulence the patient should restrain

belching. No restriction of diet is necessary. Carbonic acid beverages and gas-forming foods should be avoided; nerve sedatives may be helpful. In secondary flatulence the primary trouble should be treated. Fluids should be aspirated. Iodids, digitalis, etc., should be administered, and the patient should take small and frequent meals.

New York Medical Journal, New York.

September 14.

9 Electrolysis and the Nervous System. Sir J. A. Grant, Ottawa, Can.
10 *The Ideal Ligature. A. D. Whiting, Philadelphia.
11 *Tuberculosis Classes. J. B. Hawes, Boston.
12 *Movable Kidney in Genesis of Bile Duct Disease. A. E. Gallant, New York.
13 Detection and Estimation of Reducing Sugars. S. R. Benedict, New Haven, Conn.
14 *Traumatic Edema of Cornea in New-Born Infant. A. Brav, Philadelphia.
15 Instruction to Those Having Chancroids. V. C. Pedersen, New York.
16 *Analysis of the Cardinal Symptoms of Ileus. A. P. Condon, Omaha, Neb.

10. **Ideal Ligature.**—Whiting goes into the history of ligatures and sutures, before detailing his investigations in search of the ideal ligature, which he defines as one absolutely free from germ life, remaining sterile so long as it is retained in the tissues of the body, strong and flexible, and absorbed or replaced by living tissues after it has fulfilled its function. He considers that he has found such a ligature, and closes his article as follows: 1. The ideal ligature is obtainable by treating catgut before it has been twisted into a solid cord or string. 2. Catgut treated before it is twisted is much stronger than catgut sterilized after it has been made into a solid cord or string. 3. It is possible thoroughly to impregnate the untwisted gut with a chemical which will become a component part of the catgut when twisted. 4. Silver iodid gut will remain sterile as long as it is retained in the living tissues and will possess germicidal powers until it has been absorbed or replaced by living cells, the fluids of the body breaking up the silver iodid into silver, iodin, and various compounds of these chemicals. 5. It is possible and practicable to produce catgut that is absolutely free from germ life and that has antiseptic and germicidal powers, by treating the gut with various chemicals before it is twisted into a solid string or cord.

In a footnote, Whiting calls attention to a paper by Kuhn and Rössler, in the Deutsche Zeitsch. f. Chir., lxxxvi, No. 2, an abstract of which appeared in THE JOURNAL, Aug. 10, 1907, page 529, in which they describe this method of treating catgut, and states that he had not heard of their work till after his paper was written. He also states that his first laboratory tests were made in May, 1906, about a year and a half after he first commenced investigating the subject, and that this method of treating catgut was registered in the Patent Office in Washington, D. C., though not by him, early in 1906.

11. **Tuberculosis Classes.**—Hawes goes at great length into the methods of the tuberculosis class, which consists of a group of consumptives, poor, but not so poor but that each can live at home, and attend strictly to the business of getting well. The main features of this method are: 1, The keeping of home records by each patient; 2, weekly meetings of the class as a whole; 3, visits in the homes of the patients by a nurse in charge of this work, or by volunteer friendly visitors. Each of these points is considered in great detail.

12. **Movable Kidney and Bile Duct Disease.**—Gallant describes 10 cases, from which he feels justified, at least tentatively, in adopting the following conclusions:

1. The inception of disorders of the biliary tracts arise from traction or pressure on the bile ducts by a prolonged kidney. At first there is but slight mobility, slight traction, and a slight attack, of a "bilious" nature, with or without jaundice. It is owing to the transitory nature of the attacks during its incipiency that examination is but seldom made, or the kidney can not be palpated because it has slipped back, as soon as the patient lies on her back, and the gall bladder empties itself as soon as the tension is released. The mobile kidney gradually increases in size and mobility, exerting greater traction, causing greater obstruction, greater bile stasis, greater colic and jaundice, with infection, precipitation, stone formation, ulceration, perforation.

2. These attacks can almost always be arrested and the diagnosis established by placing the patient in a bed with the foot raised ten inches, and replacing the kidney by careful manipulation.

3. By the early recognition of the kidney mobility as the cause, in the early stage of the disease, and the early wearing of a special corset, exacerbations can be prevented, further progress of duct disease avoided, gallstone formation eliminated, operations for their removal reduced to a minimum, and at the same time by the use of the corset we overcome the bad effects arising from ptosis of other abdominal viscera.

4. When pain, fever, and jaundice do not diminish or subside within from twenty-four to forty-eight hours, or unmistakable signs of severe infection or peritoneal invasion are present, operate quickly and thoroughly.

14. **Edema of the Cornea in Infant.**—Brav reports a case of traumatic edema in a new-born infant, of a kind to which he is unable to find a parallel in the literature. It was difficult to distinguish between the following conditions: 1, Congenital corneal opacities resulting from a keratitis *in utero;* 2, anomalies of the cornea due to faulty embryonic development; 3, keratitis superficialis; and 4, hydrophthalmus. The treatment of the condition is expectant. In the present case a 1 per cent. solution of dionin was used with gratifying results. Brav thinks it increases the activity of the lymphatic elements and so hastens absorption of the exudate.

16. **Ileus.**—Condon concludes his paper as follows: When the physician understands the pathologic changes which occur at the seat of the obstruction, and that the principal factor in the causation of a fatal termination is the absorption of the toxins, he will spend no time in medical treatment, but will at once resort to surgical measures, for each hour of waiting puts the patient into a deeper state of intoxication and allows irreparable damage at the seat of the obstruction to occur, thereby lessening the possibility of a successful operation. Ileus is one of the accidents of medicine, and is a condition for emergency work, therefore every practitioner (when a surgeon is not available) should be able to do a laparotomy at the onset of an obstruction. If done in the early hours, it is not a serious operation, nor one that should be attended with much technical difficulty, nor a high mortality. It is only when the bowel becomes gangrenous and it is necessary to do a resection, or after the patient has developed a peritonitis, or is prostrated by long and continued vomiting, that the operation becomes formidable.

Boston Medical and Surgical Journal.

September 12.

17 *Operative Treatment of Varicose Veins of the Lower Extremity. J. T. Bottomley, Boston.
18 *Rectal Anesthesia. J. H. Cunningham, Jr., Boston.
19 Early Diagnosis of Pulmonary Tuberculosis by the General Practitioner. E. O. Otis, Boston.
20 Report on a Peculiar Disease of Tropical Africa Called Onyalai. F. C. Wellman, Benguella, West Africa.

17. **Varicose Veins.**—Bottomley thus sums up the substance of his article: 1. The important etiologic factor is a congenital one; in a small proportion of cases it is inflammatory. 2. The operation that will give the best results must have as its essential feature extirpation of the internal saphenous vein; but to this such other procedures must be added as are suitable to each individual case. 3. Before operative measures are undertaken it must be demonstrated that the deep venous circulation of the lower extremity is not obstructed to any marked degree. 4. In properly selected cases it is believed that a permanent cure may be promised. 5. The operation is almost but not entirely free from danger.

18. **Rectal Anesthesia.**—Cunningham describes the method of inducing ether anesthesia by rectum. A bottle, 7½ inches in height, of which 5 inches are used for ether space and 2½ inches for vapor space, is used. A tube penetrating the cork, and reaching nearly to the bottom of the bottle, is connected by means of a rubber tube with a cautery bulb. The efferent tube, which penetrates through the cork into the open space above the ether is connected also by another rubber tube with the rectal tube. The bottle is placed in a water bath with a temperature between 80 and 90 F.—below the boiling point of ether, which is 98.6 F. Inexpensive ether has been found quite as satisfactory as the most expensive. The patient lies on the back with the legs in slight flexion. The rectal tube is inserted from 10 to 14 inches, the efferent tube is connected with it and the vapor forced in by pressing the cautery bulb. Keeping the forefinger in the rectum beside the tube, unless it causes the patient pain, hastens expulsion of the rectal gases. The rectum must be distended to the point of emptying itself around the tube, otherwise ether is absorbed much more slowly. After all the gas has been expelled the ether should be forced in by a few squeezes of the bulb every five

or ten seconds. The breath becomes ether laden in from one to five minutes after the ether is started. The patient gradually becomes drowsy, the breathing stertorous, and he then passes into complete surgical narcosis without any stage of excitement. When narcosis is complete, the usual precautions of ether anesthesia must be observed. If too great narcosis has taken place, the efferent tube should be disconnected, and ether be forced through the rectal tube by abdominal massage. Of course, the rectum must be thoroughly cleaned out prior to the operation. Little ether is needed, vomiting seldom occurs, bronchial secretions are absent, there is a rapid recovery from the ether. A number of cases are reported and the opinions of other surgeons on the methods are cited.

Lancet-Clinic, Cincinnati.

September 14.

21 *Neurosis of the Stomach. F. L. Rattermann, Cincinnati.
22 *Phytolacca. F. Ellingwood, Chicago.
23 Care of the Stump of the Appendix. C. T. Souther, Cincinnati.

21. **Stomach Neuroses.**—Rattermann lays stress on the great importance of the nervous system as a factor in stomach trouble. He illustrates the harmful results of directing the attention too closely to the regulation of the physiologic functions of the body. The result of such a procedure is that the organs of the body are raised like hothouse plants, and are exceedingly reactive against abuses which an ordinary individual does not feel.

22.—This article also appears in the *Medical Fortnightly*, Sept. 10, 1907.

Medical Fortnightly, St. Louis.

August 26.

24 Dawn and Development of Urology. B. Lewis, St. Louis.
25 Strangulated Hernia. A. C. F. Brown, St. Louis.
26 Case of Extradural Abscess. S. Spencer, St. Louis.
27 Case of Papilloma of Caruncle. C. Loeb, St. Louis.

September 10.

28 Egypt and the Egyptians. R. G. Eccles, Brooklyn, N. Y.
29 *Handling and Conveyance of the Sick and Injured in St. Louis. G. Homan, St. Louis.
30 Phytolacca Decandra. F. Ellingwood, Chicago.
31 *Pentosuria. V. Vestling, Creston, Iowa.
32 Retropharyngeal Abscess. M. A. Goldstein, St. Louis.

29. **Handling of the Sick.**—Homan describes a street railway ambulance car, constructed for use in St. Louis, to collect patients from ambulance stations for transference to the various hospitals.

31. **Pentosuria.**—Vestling insists on the necessity of diagnosticating between diabetes, or true glycosuria, and pentosuria—the occurrence of sugars of the five-carbon series (pentoses) in the urine. The pentoses $C_5H_{10}O_5$ include the carbohydrates, arabinose, xylose and rhamose. He describes the method of testing for pentoses. The prognosis is much more favorable than in mild diabetes. The diabetic treatment is out of place in pentosuria. A milk diet is found to be particularly advantageous while a meat diet is not well borne. Though it is assumed to be rare, this condition is not a curiosity. It is possible that careful attention will now show that many cases formerly regarded as diabetes are really cases of pentosuria. Positive orcin test with negative fermentation test proves pure pentosuria. Positive orcin test with positive fermentation test denotes pentosuria and glycosuria.

Therapeutic Gazette, Detroit.

August.

33 *Etiology of Iritis. W. M. Zentmayer, Philadelphia.
34 *Iritis in General Disease. B. Chance, Philadelphia.
35 Symptoms of Iritis. S. D. Risley, Philadelphia.
36 *Treatment of Iritis. S. L. Ziegler, Philadelphia.
37 Stovain Spinal Anesthesia. G. Torrance, Birmingham, Ala.
38 *Relative Value of Obstetric Forceps and Version as Method of Delivery. W. H. Wells, Philadelphia.

33. **Iritis.**—Zentmayer, after describing the causes of iritis—syphilis, rheumatism, gout, tuberculosis, gonorrhea, diabetes and malaria, as well as those occurring in the course of infectious fevers, herpes zoster and cerebrospinal inflammations—emphasizes the point that disturbed metabolism has been shown as a factor in many cases formerly thought idiopathic, and particularly that form in which attacks are recurring or relapsing in otherwise healthy individuals is due to autointoxication. He considers the claims as to the extensive association of diseases of the accessory sinuses with ocular affections as being injudicious, since, notwithstanding that some observe the association of the affections of these organs frequently, other careful observers have failed to detect a single undoubted instance of uveal disease of accessory sinus origin.

34. **Id.**—Chance considers iritis in relation to general disease, particularly syphilis, rheumatism, gonorrhea, gout and lithemia, tuberculosis, acute infectious diseases, malaria, meningitis, whooping-cough, pyemia, infection from the mouth, diabetes, albuminuria. This list of diseases in which iritis has been present is not complete, but includes only those states most commonly seen.

36. **Treatment of Iritis.**—Ziegler discusses this under 1, local; 2, systemic; 3, surgical measures. 1. Local treatment: Atropin sulphate, 4 grains to an ounce, instilled until the pupil dilates widely, in order to prevent adhesions forming, or to break them if formed. The sedative action on the lymphatic stasis present Ziegler considers the real therapeutic factor. Symptoms of atropin poisoning should be looked for. Hyoscyamin sulphate may be substituted when atrophin is not well borne. For supraorbital neuralgia hyosein hydrobromid, ¼ gr. to 1 fluidram, is instilled into the eye; hot stupes, leeching, dionin, 5 per cent., positive galvanism, an eye shade or London smoked glasses are also used. 2. Systemic treatment: Calomel ¼ gr., four times a day for five days, is the sheet anchor. If antisyphilitic treatment is indicated, daily inunctions of unguentum hydrargyrum, 1 dram, are given, and ascending doses of potassium iodid from 5 to 100 grains, well diluted, t. i. d., for from six months to two years. With a rheumatic tendency, antirheumatic remedies are indicated. He speaks highly of a formula used at the Wills Hospital, which is merely an emulsion of turpentine in 5 to 10 minim doses, with or without quinin. It is known as Dr. McClure's mixture, and Ziegler has seen this mixture clear up a case of sympathetic iritis that would not yield to any other treatment. To produce diaphoresis, a hypodermic of pilocarpin, ⅛ gr., guarded by strychnin nitrate, 1/30 gr., or vapor baths may be employed. In gummatous iritis specific treatment must be pushed to the full limit. In tuberculous iritis, Ziegler considers tuberculin not only a reliable diagnostic test, but a valuable therapeutic agent. He prefers Koch's old tuberculin to the more virulent and more dangerous tuberculin T.R. In traumatic iritis heat is contraindicated; cold compresses are efficient. Calomel, gr. 1/10, is given every hour or every two hours. Atropin, while generally indicated, may be contraindicated by increased tension. Thyroid extract may be used in gelatinoid iritis, also dry heat and galvanism. In chronic or recurrent iritis he advises looking for nasal obstruction and accessory sinus disease. 3. Surgical treatment: Chronic or recurrent iritis, with posterior synechiæ or pupillary exclusion, often indicates iridectomy. In traumatic iritis, if the iris is torn, bruised or prolapsed, it is better to excise the injured portion at once, and carefully to dress back the edges of the coloboma, so that no incarceration or blocking up of the corneal wound may occur.

38. **Forceps Versus Version.**—Wells summarizes his paper as follows:

When rapid delivery is necessary, the pelvis being of normal size or flattened very slightly in the anteroposterior diameter, the transverse diameter being of normal size or increased, the cervix and vaginal canal dilated and well-softened, version is preferable to forceps when mechanical interference is necessary. Among the special indications for version may be classed the following: Brow or face presentations with no rotation of the chin; certain cases of occipitoposterior position; parietal presentations; placenta prævia, if the presenting part is high up in the pelvis and the soft parts dilate slowly; certain cases of deficient uterine contractions; prolapse of the cord; transverse positions; excessively large caput succedaneum; some cases of eclampsia.

Forceps delivery gives best results in the largest number of labors delayed by weak uterine contractions in which interference is necessary, in the majority of cases of posterior rotation of the occiput. Forceps are also to be used in cases of rachitic, generally contracted, or in justominor pelves, providing the contraction is not great enough to prevent the head and shoulders of the child from passing through the inlet, and in those patients having certain constitutional diseases, when manual delivery is to be performed.

Neither forceps nor version should be attempted in any case of hydrocephalus or abnormally enlarged fetal body unless craniotomy or evisceration has first been performed.

Columbus Medical Journal.

August.

39 Practical Bacterial Therapy and Theory of Opsonins. A. P. Ohlmacher, Detroit, Mich.
40 *Quarantine in Rural Districts. R. Williams, Girard, Ohio.

40. **Rural Quarantine.**—Williams points out that quarantine in contagious diseases is of the same importance in rural districts as in urban, yet the different conditions make it much more difficult for the rural health officer, however assiduous, to carry it out effectively. When persons are placed under quarantine in rural districts they have the right to expect the same sanitary care as is given in the city. He reports instances of the difficulties in the country, and suggests that it would be better to change the health department from the various township and village health boards as now existing, to a county board of health, elected by popular vote, the board to be compensated for the time devoted to the work, with a county health officer and assistants, whose time will be entirely employed at a reasonable salary—the health officer to be appointed on the merit system and his term of office not subject to change with the personnel of the board of health.

Virginia Medical Semi-Monthly, Richmond.

August 23.

41 Significance of Pain in the Upper Abdomen. T. C. Witherspoon, Butte, Mont.
42 Report of Surgical Cases of the Southern Railroad Company Employés. G. B. Thornton, Memphis, Tenn.
43 Importance of Early Recognition in Nasal Obstruction with Relation to Disease in Other Regions. C. H. Knight, New York.
44 *Malaria as a Surgical Complication. T. M. Aderhold, Ziegler, Ill.
45 Treatment of Typhoid. J. W. McGehee, Reidsville, N. C.
46 A Promising Specialty of the Future. C. C. Miller, Chicago.
47 Principles of Surgery. S. McGuire, Richmond.

44.—Abstracted in THE JOURNAL, June 22, 1907, page 2150.

American Medicine, Philadelphia.

August.

48 Surgery of the Gall Bladder and Bile Ducts. H. C. Rooth, Buffalo, N. Y.
49 *Dementia Præcox. T. J. Orbison, Philadelphia.
50 *Statistical Study of the Relation Between the Height of the Longitudinal Arch and the Functions of the Foot. P. Hoffmann, St. Louis.
51 Bilateral Abductor Laryngeal Paralysis with Tabetic Manifestations. J. A. Patterson and L. G. Brown, Colorado Springs, Colo.
52 Trophoneurosis of the Hands Allied to Erythromelalgia and to Raynaud's Disease. A. Gordon, Philadelphia.
53 *Legal Control Necessary in Treatment of Drug Habits. F. H. Gerrish, Portland, Me.
54 Proper Time to Use Ultraviolet and Roentgen Rays in Tuberculosis. C. F. Gissler, Brooklyn, N. Y.

49. **Dementia Præcox.**—Orbison describes six cases of dementia præcox representing four of the more or less arbitrary clinical divisions of the disease, namely: 1, Incipient paranoia; 2, acute paranoia; 3, hebephrenia; 4, chronic paranoia. In two cases of acute and one of incipient paranoia recovery ensued and the patients have remained normal to the present, notwithstanding that the prognosis was bad in four cases. This kind of insanity is the most difficult to treat—difficult in the senses of "arduous, not easy, vexatious." The most important point is the choice of companions, on whom devolves the task of daily and hourly substituting the normal idea, thought and action, for the abnormal, illogical and bizarre. The method of attack must vary with each individual case. The removal of the patient from home and the placing in a suitable environment is important. Orbison's patients were placed in the home of a physician, who lived where city and country met. He believes this plan to possess many advantages over an institutional life in this class of cases. During the course of treatment, commendation should be freely given, such patients being susceptible to flattery and affected by blame. The alimentary canal, the skin, a carefully arranged routine for the day, including ample variety of exercise and amusement, should all receive attention. The author emphasizes the importance of the mental treatment as follows: "This to me is the kernel of the whole matter; repetition of the normal thought, word and act, until the normal habit is formed again. The time to get in the best work is during the patient's 'good days,' and between relapses." Drugs may be required for constipation, diarrhea, over-excitability and insomnia. The author emphasizes Clouston's advice of a course of thyroid extract in 60-grain doses a day, to produce a short five or six days' fever, as essential when danger signals begin to appear. Restraint is used only in cases of intense motor excitement and when danger is to be apprehended.

50.—This article appeared in the *Interstate Medical Journal*, August, 1907, and was abstracted in THE JOURNAL, August 24, 1907, page 719.

53. **Drug Habits.**—Gerrish urges the necessity of physical restraint of the victim of drug habits, and quotes the act of the state of Maine, 1905, as a suggestion, perhaps as a model, for legislation throughout the country.

Medical Standard, Chicago.

August.

55 Fifty Brief Biographic Clinics on Living Patients. G. M. Gould, Philadelphia.
56 Volvulus of the Sigmoid. B. Robinson, Chicago.
57 The Surgical Prostate. F. A. Lewsman, Chicago.

Western Canada Medical Journal, Winnipeg.

July.

58 Rôle of the General Practitioner in the Advancement of Medical Science. J. Mackenzie, Burnley, Eng.
59 Displacement of the Uterus. C. N. Cobbett, Edmonton, Can.
60 Ectopic Pregnancy. E. G. Mason, Calgary, Can.

Journal of Outdoor Life, Trudeau, N. Y.

September.

61 Campaign Against Tuberculosis in Hartford. H. F. Stoll, Hartford, Conn.
62 What Cooperation and Hard Work Have Done at Washington to Stamp Out Tuberculosis. W. H. Baldwin, Washington, D. C.

Central States Medical Monitor, Indianapolis.

August.

63 Relation of Tuberculous Lesions to the Mode of Infection. R. W. Tuck, Arkansas City, Kan.
64 Pathology and Treatment of Hepatic Functions. H. Richardson, Baltimore.
65 Lobelia Inflata. J. W. Crismond, Anderson, Ind.
66 Estivoautumnal Fever. G. D. Marshall, Young America, Ind.

Pennsylvania Medical Journal, Athens.

August.

67 Case of Pernicious Anemia with Jaundice. J. G. Wilson, Montrose.
68 *Accidents and Complications of Perineal Prostatectomy. L. J. Hammond, Philadelphia.
69 Prostatectomy. J. B. Deaver, Philadelphia.
70 *Causes of Failure in Tendon Grafting. D. Silver, Pittsburg.
71 *Surgical Treatment of Chronic Colitis. W. M. Beach, Pittsburg.
72 *Peculiar Trophic Affection of the Skin in Neurotic Subject. R. Myers, Huntingdon.
73 Hypertrophic Pulmonary Osteoarthropathy. H. R. M. Landis, Philadelphia.
74 Fractures of Head and Neck of Radius. T. T. Thomas, Philadelphia.
75 *New Procedure for Treating Prolapse of the Iris Complicating Perforating Wounds of the Cornea. E. B. Heckel, Pittsburg.
76 Aids in Teaching Climatology and Climatotherapy. G. Hinsdale, Hot Springs, Va.
77 Consideration of Failing Cardiac Compensation. J. A. Lichty, Pittsburg.
78 Optic Neuritis in Tumor of Brain. B. Chance, Philadelphia.

68, 71.—Abstracted in THE JOURNAL, Oct. 13, 1906, page 1220.

70.—Abstracted in THE JOURNAL, Oct. 13, 1906, page 1221.

72.—Abstracted in THE JOURNAL, Oct. 20, 1906, page 1323.

75.—Abstracted in THE JOURNAL, Oct. 6, 1906, page 1130.

Northwest Medicine, Seattle.

August.

79 Cellular Cooperation and Conflict or the Ethics of Physiology. E. Crutcher, Seattle.
80 Etiology and Pathology of Salpingitis and Pyosalpingits. B. Elmore, Seattle.
81 Symptoms and Differential Diagnosis of Salpingitis and Pyosalpingitis. C. Smith, Spokane.
82 Palliative and Radical Treatment of Salpingitis and Pyosalpingitis. W. W. Mackenzie, Spokane.
83 Angina Pectoris, Pseudoangina and Palpitation. J. W. Bailey, Seattle.

Montreal Medical Journal.

August.

84 Immunity and Preventive Medicine. S. Ortenberg.
85 Bronchiectasis with Bacillus Influenza. E. T. F. Richards and F. B. Gurd, Montreal.
86 Case of Molluscum Contagiosum. W. E. Nelson, Montreal.
87 Perichondritis of Larynx Occurring During Typhoid. H. S. Birkett and H. S. Muckleston, Montreal.

Western Medical Review, Omaha.

August.

88 Therapeutics in Dermatology. A. Schaler, Omaha.
89 *Uterine Decidua as a Diagnostic Sign in Ectopic Pregnancy. A. P. Condon, Omaha.
90 Archebiosis and Heterogenesis. L. A. Merriam, Omaha.
91 *Stomach Symptoms But Not Stomach Disease. L. W. Littig, Iowa City, Iowa.

89, 91.—Abstracted in THE JOURNAL, June 8, 1907, page 1982.

Iowa Medical Journal, Des Moines.

August.

92 Education as an Adjuvant. E. E. Munger, Spencer.
93 Therapeutics of Lobar Pneumonia. F. J. Murphy, Sioux City.
94 The Opsonic Index and Vaccine Therapy. H. Albert, Iowa City.
95 Epildemic Cerebrospinal Meningitis. W. J. Fenton, Mystic.
96 The Cold Bath. L. Brown, Rockford.
97 Ophthalmology and Otology in England. P. R. Wood, London, Eng.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of execptional general interest.

British Medical Journal, London.

August 31.

1 *Clinical Pathology in Its Relation to Diagnosis and Treatment. C. B. Lockwood.
2 *Open-Air Treatment of Acute Pneumonia. G. E. Rennie.
3 Need for the Inspection of all Residential Secondary Schools in Matters Relating to Sanitation and Hygiene. T. D. Acland.
4 *The Transformation of the British Medical Association. A. Cox.
5 President's Introductory Remarks, Naval and Military Section. J. Porter.
6 *Treatment of Wounded in Fleet Actions. A. Gaskell.
7 *Enteric Fever. A. M. Davies.
8 *Frequency of Aneurisms in the Royal Navy. P. W. Bassett-Smith.
9 *Treatment of Syphilis Afloat. C. K. Bushe.
10 Wireless Telegraphy and Hospital Ships. H. L. Norris.
11 *Enteric Fever During Active Service. R. Caldwell.
12 Position of the Volunteer Stretcher Bearer. P. B. Giles.
13 Disposal of Excreta in Camp and on the Line of March. P. B. Giles.
14 Water Supply in Camps, on the Line of March and in Battle. N. Falchnie.
15 Necessity for Trained Male Personnel in the Medical Services on Mobilization for War. E. M. Wilson.
16 *Teaching of Hygiene in the Army. R. J. Blackham.
17 *Treatment of Burns and Scalds Afloat. P. T. Sutcliffe.
18 *Trypsin Treatment in Malignant Disease. A. Cutfield.
19 *Two Unusual Fractures. R. Miller.
20 Lactic Acid and Digestive Disorders. T. B. Sellors.

1. **Clinical Pathology.**—Lockwood considers the relation of various micro-organisms to diagnosis and treatment, and of histologic sections in the diagnosis of cancer. Regarding the diphtheria bacillus, the point he makes is that by the systematic use of culture methods we now find the diphtheria bacillus very frequently under conditions where we should not expect it. He relates the case of a child with inflammation and suppuration of the scalp. Examination showed the pus to contain a micrococcus, probably from the hair follicles, a streptococcus, and the diphtheria bacillus. The child was treated afterward with therapeutic serum and recovered, after having paralysis of various groups of muscles. Other cases unexpectedly found dependent on the diphtheria bacillus were vulvitis, an empyema, and an abscess of the breast. "So that if you cease to think that you can diagnose these infective conditions on clinical evidence, and if you begin systematically to investigate them by modern scientific methods, I am sure you will find that most curious thing come to light." In regard to streptococcus poisoning, Lockwood reports an exceedingly interesting case, in which a woman was operated on for abdominal tumor in the region of the pylorus, which proved to be an inflamed kidney with a quantity of pus in the pelvis. The patient recovered with a small sinus in the right iliac fossa. Cultures inoculated from the sinus were sterile. She returned in a few weeks exceedingly ill; temperature, 104; pulse, 112; respiration, 28. A blood culture showed acute streptococcus poisoning, but notwithstanding serum treatment the patient died. The interesting point is that when she left the hospital she had no streptococci, as was shown by cultures. Inquiry elicited the fact that after leaving the hospital she slept in the next room to a patient who had died of puerperal septicemia, and had been attended by the same nurse. Lockwood's experience with *Staphylococcus aureus* leads him to conclude that vaccination with the culture of the staphylococcus materially shortens a staphylococcus infection of the breast. He describes the method. He has found the treatment of tubercle by vaccination disappointing.

2. **Acute Pneumonia.**—Rennie gives his experience with the Northrup method of open-air treatment in acute pneumonia, which he has adopted in every case of acute pneumonia occurring in the Royal Prince Albert Hospital, Sydney, N. S. W., during the last ten months. No unfavorable symptoms of any kind have appeared in any patient who has been treated. The temperature has never risen above 103.8 F.; the crisis has never been delayed beyond one week, and almost immediate improvement in the pulse has been noticed so that rarely has a cardiac stimulant been necessary. He has questioned the older and more experienced nurses as to their impressions of the results of this treatment, as compared with treatment on old lines in former years, and they are unanimously enthusiastic about the immense improvement. He has no hesitation in recommending its general adoption.

4. **British Medical Association.**—This is an admirable presentment of the advantages of organization of the medical profession. To quote only one instance, the association has effected an understanding that when the terms of some advertised medical appointment do not meet with the approval of the profession in that district, on the request of a branch or division (which corresponds to a state or county society in America) a "Warning Notice" is inserted in the *British Medical Journal*, calling attention to the facts of the case, and asking intending applicants to apply first of all to an association official in the district. The *Lancet*, also, generously supports the association's ethical committee in this matter by publishing the warnings and also by referring any doubtful looking advertisement offered to it to the association's medical secretary, and, further, the medical agents, who are numerous in Great Britain as intermediaries between medical employers and employés, have agreed not to have anything to do with appointments objected to by the British Medical Association.

6. **Treatment of Wounded in Fleet Action.**—Besides consideration as to hospital ships, first-aid dressings, ambulance drill and accommodation, etc., Gaskell makes two important suggestions: First, that if time allows, before going into action, every one in the ship should receive a hot antiseptic bath and be clothed in a complete war suit consisting of non-inflammable flannel impregnated with double cyanid salt, and that as much as possible of the body surface should be covered, even to the extent of wearing flannel masks with openings for mouth, nose and eyes. The war clothing should be sterilized and packed away until required. Gaskell appeals to Suzuki's book as testimony to the terrible sepsicity produced by clothing carried into wounds in the Chinese-Japanese war, and to the apparent results in the Russo-Japanese war of bathing and the adoption of clean clothing, preparatory to action. The other suggestion is with regard to the moving of the wounded. During a fierce action, they should not be moved. The details of their moving should be settled by the chief medical officer, according to whether the firing is at long range and desultory or short range and fierce, whether a victorious action or the reverse, and whether the physicians and stretcher parties, if killed, can be easily replaced.

7. **Spread of Typhoid.**—Davies discusses the question of the communicability of typhoid by direct contagion, and gives reasons based largely on military experience, for believing that it is directly contagious to a much greater extent than has hitherto been admitted. Such an assumption will be found to explain a large proportion of the incidence of enteric fever under active service conditions, and it is, therefore, justifiable to use it as a working hypothesis. He then proceeds to discuss its application to service conditions, especially in warfare.

8. **Aneurisms in the Navy.**—Bassett-Smith, as the result of statistical investigation, arrives at the conclusion that the conditions of life under which men in the royal navy work markedly favor the development of aneurismal tumors. He looks to the development of the body by means of the Swedish drill, now in vogue, to have a beneficial effect.

9. **Syphilis Afloat.**—Bushe examines all men joining the depot and if in any case syphilis has occurred within the two past years, antisyphilitic treatment is continued. All his patients receive mercury by intramuscular injection, using the cream supplied by the service: Mercury, 2 parts by weight; lanolin, 14 parts by weight; white petrolatum with phenol, 2 per cent., 20 parts by fluid weight. Ten minims of this preparation correspond to one grain of metallic mercury. It is heated and injected with a boiled glass syringe. The needles are dropped into boiling oil before use and cooled by dropping

into a 1 to 40 carbolic solution. The cream has to be constantly stirred, the mercury tending to fall to the bottom.

11. **Typhoid Fevers.**—Caldwell supports the views expressed by Davies in abstract No. 7.

16. **Hygiene in the Army.**—Blackham says that preventive medicine is now no longer a matter of sewers and drains, microscopes and test tubes, and a specialty practice for the few. We have advanced beyond the hygiene of mere environment to the hygiene of the individual. In future wars it should be the pride of the regimental officer not merely that he attended the wounded under the heaviest rifle fire, and tied arteries where shells fell thickest, but that his regiment contributed fewest cases of typhoid and dysentery to the field ambulance and that the camps occupied by his battalion were the most sanitary in the brigade.

17. **Burns and Scalds.**—Sutcliffe details the various modes of treatment and divides them into powders, oils and lotions. He gives the preference to lotions, and chooses above all others a 5 per cent. solution of picric acid, which, he states, has all the advantages of boric acid plus the most important one of relieving pain in superficial burns. While picric acid is explosive under certain conditions, he considers that if kept cool and unconfined it is free from danger.

18. **Trypsin in Malignant Disease.**—Cutfield reports the case of a patient with a malignant cystic growth, which was removed at Guy's Hospital, but which recurred. As Mr. Dunn, who had operated, said that nothing surgical would avail further, the patient was put on hypodermic injections of trypsin and amylopsin and very soon improvement set in and continued steadily. Vomiting, nausea and flatulence disappeared, appetite improved, swelling diminished, and body weight increased. At the end of three months the man was practically well.

19. **Unusual Fractures.**—Miller reports a fracture of the scaphoid bone of the left wrist, and a compound comminuted fracture of the distal phalanx of the left great toe.

The Lancet, London.

August 31.

21 *Students' Number, Session, 1907-1908.

21.—This issue of the *Lancet* is devoted to the usual address to students and information regarding regulations of medical examining bodies in Great Britain; hospitals and medical schools, metropolitan, provincial, Scottish and Irish; the public services; public health; dental surgery, and other information of service to the intending student of medicine.

Medical Press and Circular, London.

August 21.

22 Consequences and Treatment of Laceration of Female Perineum. R. J. Kinkead.
23 Phagocytosis and Bactericidal Action. G. Dean.
24 Indications for Operation in Intracranial Tumor. J. S. R. Russell.
25 Disinfection Considered from Medical, Chemical and Bacteriologic Standpoints. S. Rideal.
26 Reduction of Infant Mortality by Better Management and Control of Milk Supply. H. Kenwood.

Journal of Tropical Medicine and Hygiene, London.

August 15.

27 *Prevalence of Beriberi in Hong Kong. W. Hunter and W. V. M. Koch.

27. **Beriberi.**—Koch recommends the following measures to prevent the outbreak of beriberi among people who are liable to be confined in buildings for any long period of time: 1. The buildings should be well ventilated. 2. There should be no overcrowding. 3. The food supply should be ample in quantity and of good quality. 4. The drainage should be perfect. 5. The buildings should be so constructed as to get all the sunshine possible. 6. Damp in the buildings should be avoided. 7. The inmates should have regular exercise in the open air. 8. The greatest personal cleanliness should be insured. On the outbreak of the disease in an institution the inmates should be promptly removed from it and the following measures taken: 1. The building should be disinfected, and then all the doors and windows should be kept open and fresh air and sunlight allowed to enter. 2. The clothing should be disinfected. 3. The furniture should be disinfected. Treatment necessarily must be empirical and symptomatic, the cause of the disease being unknown. Iron, arsenic and strychnin have proved of benefit in the author's hands. The effect of mercury is variable. Massage and electricity have also proved useful.

Intercolonial Medical Journal of Australasia, Melbourne.

July 20.

28 Significance and Management of Fever in Pulmonary Tuberculosis. C. Reissmann.
29 Sanatorium for Open-Air Treatment of Pulmonary Tuberculosis and Its Methods. F. J. Drake.
30 Operative Treatment of Puerperal Pyemia. W. Moore.
31 *Dermoid Cyst in Pregnancy With Appendicitis. R. A. Stirling and H. B. Devine.
32 Treatment of Contractures in Children. W. MacKenzie.
33 *Fatal Case of Mushroom Poisoning. F. M. Johnson.
34 Bullet Wound of Axilla, Dividing Axillary Artery and Involving Axillary Vein. G. A. Syme.
35 Case of Compound Comminuted Fracture of Humerus. G. A. Syme.
36 Case of Sarcoma of the Breast. H. Laurie.
37 Hatpin in the Intestine. E. J. Roberts.

31. **Unusual Ectopic Gestation.**—Stirling and Devine report the case of a woman, aged 27, who was operated on for ectopic gestation, the peculiar points in the case being that with an abdomen practically full of blood, no source of tubal hemorrhage could be discovered; absence of any uterine symptoms; normal size of the uterus, and the fact that the lining membrane of the tube was perfectly normal from beginning to end.

33. **Mushroom Poisoning.**—Johnson reports a case of mushroom poisoning in a child aged 6, who, an hour after eating mushrooms, was attacked by vomiting. An hour or two later he fell asleep and slept for two hours, when he awoke hungry and asked for his dinner. He became much brighter and from 6 to 8 o'clock played in the street with other children, being apparently all right, but at 8:30 he again became sick, and died at 6 o'clock next morning. Johnson records the case as illustrating the deceptive nature of mushroom poisoning, and recalls Quain's statement that "the patient can not be considered safe for at least three days, unless the prominent symptoms have been markedly alleviated." Johnson, however, would substitute "even if" for "unless' in Quain's dictum.

Bulletin de l'Académie de Médecine, Paris.

June 11, LXXI, No. 24, pp. 717-752.

39 *Nucleinate of Sodium to Promote Phagocytosis in Peritoneal Infection. Chantemesse and Kahn.
40 Movable Kidney and Complications. (Rein mobile, tiraillement des capsules surrénales, accidents nerveux et folie.) Lucas-Championnière. Id. Reynier.

June 18, No. 25, pp. 753-792.

41 Obstetric Anatomy. (Anatomie et obstétrique.) Faraboeuf.

June 25, No. 26, pp. 793-814.

42 Intestinal Invagination in Infants. Kirmisson.

July 9, No. 28, pp. 31-65.

43 *Aseptic Purulent Pleurisy. (Pleurésies puriformes aseptiques.) Widal.
44 Infant Mortality. Vidal.
45 *A Danger from Atoxyl. Hallopeau.

July 23, No. 30, pp. 107-162.

46 Bacteriologic and Experimental Study of Smallpox Vaccine. (Vaccine antivariolique.) Kelsch, Camus and Tanon.
47 *Ocular Reaction in Diagnosis of Typhoid. (Ophthalmodiagnose de la fièvre tifoïde.) A. Chantemesse.
48 Treatment of Pellagra with Atoxyl. V. Babes.
49 Diagnosis of Bronchial Glandular Affections in Children. (Adénopathie bronchique simple.) D'Espine.

July 30, No. 1, pp. 163-196.

50 Electricity in Treatment of Cancer. Keating-Hart and S. Pozzi.

39. **Nucleinate of Soda in Peritoneal Infections.**—Chantemesse and Kahn have found that nucleinate of soda, 1 to 100, injected hypodermically, at once arouses a rather lasting increased phagocytic action in peritoneal infections. In two cases they have even seen the classic symptoms of typhoid perforation ameliorated to such an extent as to render operation hopeful, by the two or three injections given from fifteen to eighteen hours after the first signs of the perforation. The patients refused operation, dying twelve days later of slow peritonitis, and the autopsy revealed a very marked defensive leucocytic and connective tissue process in the abdomen, the large perforations being almost thoroughly obliterated. They see a decided utility in the action of the drug in such conditions, and one not limited altogether to peritoneal inflammations, as they have seen it of value also in erysipelas and pneumonia. The reaction is moderately severe, which is to some extent a drawback.

43. **Aseptic Purulent Pleurisy.**—This subject was discussed editorially in THE JOURNAL, Sept. 7, 1907, p. 854. Widal relates two cases. The suppuration in each followed removal of the serous fluid from the chest. He has previously called attention to the same phenomenon of aseptic suppuration in the spinal meninges in the course of various acute and chronic affections. The integrity of the polynuclears reveals the absence of conflict with bacteria, so that a glance through the microscope will confirm the aseptic character of the suppuration and the favorable prognosis.

45. **A Danger of Atoxyl.**—Hallopeau reports a case that came to his knowledge through a confrère. A woman, aged 47, of previous intemperate habits and showing signs of alcoholic neuritis, had received within 26 days' treatment, a total of 5.10 grams of atoxyl by hypodermic injection. A few days after the last injection she began to suffer from disorders of vision, which culminated in complete amaurosis in fourteen days. Ophthalmoscopic examination gave negative results, aside from showing a slight localized chorioiditis. In this case the alcoholic record and neuritis and the possibility of impurities in the drug, such as have been found by Duret, are to be considered, but it is not the only instance of amaurosis from its use—similar effects have been noted by Ayres Kopke of Lisbon and were reported by him at the recent conference at London on sleeping sickness. By his method of administration, allowing time after a series of injections for a complete elimination of the arsenic before beginning a second series, Hallopeau has observed slight symptoms of gastric intolerance, but never until after the fourth injection. Hence it is advisable to stop with three, and he thinks treatment thus restricted will be effective.

47. **Ophthalmo-Diagnosis of Typhoid.**—This subject is discussed editorially in this issue of THE JOURNAL.

Semaine Médicale, Paris.

June 19, XXVII, No. 25.

51 *Relations Between Chronic Gastrointestinal Disorders and Anemic Conditions. (Troubles gastro-int. chron. et états anémiques.) L. Tixier.

June 26, No. 26.

52 *Mortality of Acquired Syphilis. C. Audry.

July 3, No. 27.

53 Appendices Epiploicæ in Hernias. H. Vulliet.

July 10, No. 28.

54 Distribution of Fluid in Vital Media. (Partage du liquide entre les milieux vitaux.) C. Achard.

July 17, No. 29.

55 Chronic Torsion and Incomplete Torsion of the Pedicles of Tumors in Uterus or Adnexa. Lejars.

July 24, No. 30.

56 Tendinitis and Peritendinitis. R. de Bovis.

July 31, No. 31.

57 Is There An Uremic Meningitis? R. Lépine.

August 14, No. 33.

58 *Arteriosclerosis of the Stomach. (Art. gastrique.) L. Cheinisse.

August 21, No. 34.

59 Drainage in Gynecology. R. de Bovis.

August 28, No. 35.

60 *Gastric Secretion in Nephritis. E. Enriquez and L. Ambard.

51. **Anemia from Gastrointestinal Disease.**—Tixier concludes that insufficiency of the blood-forming function is not, primarily at least, at fault in the production of the secondary anemias following chronic gastrointestinal disease. He considers the anemia more probably due to the existence in the blood serum of hemolytic substances, perhaps produced by chemical changes connected with functional disturbances in the digestive organs. Besides the indirect pathologic evidence of the existence of such hemolytic action, he has been able to demonstrate it directly by the action of the serum of anemic rabbits on the blood of normal ones. With its globulicidal power, it has a certain stimulant action on the blood-forming apparatus in the bone marrow, which, however, seems to be more quickly exhausted than is its destructive action. His study, he considers, emphasizes the importance of functional over anatomic gastric lesions in the production of anemia.

52. **The Mortality of Syphilis.**—From a critical study of life insurance and other statistics, the medical literature of the subject, clinical records and his own personal observations, Audry, while admitting that absolutely definite conclusions can not be drawn, formulates his "impressions" substantially as follows: The global mortality of syphilis, specific and deuteropathic, approximates from 14 to 15 per cent. That is to say, 14 or 15 per cent. of syphilitics die as a result of their disease sooner or later, though perhaps not till after a lapse of many years. The mortality, like the occurrence of tertiary manifestations, is influenced by a number of factors, age, treatment, hygiene, race, alcoholic habits, climate, etc. He believes that, in the climate of France, the mortality of syphilis, regularly treated and occurring in the young and temperate, ought not to exceed 4 or 5 per cent., while the proportion is ten times as large in the aged, the intemperate and in those subject to certain conditions of stress.

58. **Arteriosclerosis of the Stomach.**—Cheinisse presents evidence to show that the vessels of the stomach may become affected with arteriosclerosis without other manifestations of the affection elsewhere. This fact explains, he asserts, a certain number of cases of hematemesis hitherto regarded as idiopathic, as also certain cases of gastralgia and gastric spasms in elderly individuals. The indications for treatment are along the lines of prophylaxis. Preventive treatment of the arteriosclerosis with small doses of sodium iodid should be instituted, and everything tending to cause over-exertion of the circulation in the stomach should be avoided. The diet should be light, with small and frequent meals. If milk is taken, it should be in small amounts and never more than a quart a day. The patient should rest during digestion, and should avoid exposure to cold, which seems to favor the production of the vascular spasm. The condition in some cases, he states, might be likened to intermittent claudication, or the symptoms may simulate those of ulcer.

60. **The Gastric Secretion in Nephritis and Dechloridation.**—Enriquez and Ambard have found that deprivation of salt in the diet seems to have a leveling effect on the gastric secretion. In both hyperchlorhydria and hypochlorhydria the absence of salt from the diet brought the gastric secretion to practically a uniform level, very close to normal. Their tests further demonstrated that every nephritis, even the latent form, has a marked influence on the gastric secretion. When there are merely traces of albumin or even simple arterial hypertension in the kidney, hyperchlorhydria is observed. It is probably, they state, the result of the excess of salt in the organism, salt being the general stimulant par excellence of the gastric secretion. Retention exaggerates the gastric secretion while deprivation of salt reduces it. On the other hand, in nephritis with albuminuria the retention of salt seems to irritate the stomach mucosa just as it irritates the kidney lesion. In this case the stimulating action of the salt is overcome by its irritating and therefore depressing action, with hypochlorhydria as the result. But for the same reason that deprivation of salt has a beneficial action on the excessive secretion it also has a beneficial action on the deficient secretion. Deprivation of salt allows the stomach mucosa to recover its tone even before the general salt balance throughout the organism is restored, and thus dechloridation is liable to be followed by a brief, transient hyperchlorhydria. The effect of salt starvation on perverted secretions opens, they state, a new field for the study of the pathology of the stomach, while at the same time it suggests a rational mode of treatment for many forms of gastric affections which at first glance seem to have no connection with each other.

Archiv f. Gynäkologie, Berlin.

LXXXII, F. v. Winckel No., pp. 1-790. Last indexed, July 13, p. 198.

61 Drainage of Abdominal Cavity After Operations on Adnexa. (Bauchhöhlendrainage.) Osterloh.

62 Appendicitis and Pregnancy. (App. u. Gravidität.) H. Lindner.

63 Fever in Puerperium Uninfluenced by Drugs. (Therap. unbeeinflusste fieberhafte Wochenbetten.) A. Mermann.

64 Corpus Luteum as Source of Large Intraperitoneal Hemorrhage or Hematocele. (Entstehung von intraperit. Bluterguss.) O. Engstrom.

65 *Foreign Bodies Left After Operations. (Zurückgelassene Tupfer, etc.) F. v. Neugebauer.

66 Five Cases of Advanced Extrauterine Pregnancy. (Vorgeschrittene ektopische Schwangerschaft.) D. v. Szabo.

67 Biology of Normal Nursling. (Natürlich genährte Säugling.) R. Klemm.

68 *Sterility. (Sterilitätslehre.) L. Pincus.

69 Effect of Menstruation on Peritonitic Affections. (Perit. Erkrankungen im Menstruationsstadium.) T. Jaffé.

70 Influencing of Shape of Head by Birth Process. (Beeinflussung der Kopfform durch die Geburtsvorgange.) M. Stumpf. Id. A. Mueller.
71 Justification of Pubiotomy. (Berechtigung der Hebotomie.) W. Rühle.
72 Operation for Umbilical and Abdominal Hernia. (Nabel- und Bauchbruch.) F. Cahen.
73 Glycogen in the Placenta. L. F. Driessen.
74 *Importance of Phlebectasia and Its Consequences. O. Falk.
75 *New Standpoints for Pathology and Treatment of Osteomalacia. L. Seeligmann.
76 *Quinin as an Oxytocic. (Chinin als Wehenmittel.) L. Conitzer.
77 *Ovariotomy During Pregnancy. (Ov. während der Schwangerschaft.) S. Flatau.
78 *Imaginary Pregnancy and Missed Abortion. (Eingebildete Schwangerschaft.) M. Nassauer.
79 *Pyelitis Gravidarum. (Schwangerschaftspyelitiden.) S. Mirabeau.
80 *Exudates in Pelvis. (Beckenexudate.) F. Cohn.
81 *Symptoms of Pressure on Brain in the New-born Infant in Consequence of Intracranial Hemorrhage and Mechanical Injury of the Brain. (Hirndrucksymptome bei Neugeborenen.) L. Seitz.
82 Connective Tissue Fibers in Ovaries. (Bindegewebe der weibl. Geschlechtsorgane.) C. Hormann.
83 Postoperative Femoral and Crural Phlebitis. W. H. Morley.
84 *Experiences with Instrumental Dilatation. (Bossische Dilatator.) F. Weber.
85 Postmortem Cesarean Section. (Kaiserschnitt an der Toten.) E. v. Seuffert. Id. T. Wyder.
86 Sarcoma of the Vagina in Little Girls. (Sarkome der Scheide.) J. A. Amann.
87 Two Cases of Malignant Uterine Fibromyoma. Kynoch.
88 Premature Detachment of Normally Located Placenta. (Vorzeitige Ablösung.) A. Herzfeld.

65. **Foreign Bodies Left in Abdomen After Operations.**—In this third compilation Neugebauer gives the particulars of 40 cases. In 1899 he found records of 108 cases, and in 1904 he had collected 88 more—a total of 236 cases, not to mention a number of others in which the correct details are not known. He reviews the various measures advocated to prevent accidents. Examples are given of a printed formula to be signed by the patient and nearest relative before a major operation is attempted, and the advice is given that two witnesses should attest each document of the kind. The written permission would prevent the bringing of suits such as have annoyed Everke, Rühle, Riese, Dührssen, Kosinski and hundreds of other surgeons.

68. **Sterility and Sterilization.**—Pincus deplores the too frequent custom of treating a woman for sterility without examination of the husband. Investigation of 110 couples by Sänger revealed azoospermia or impotency in nearly 50 per cent. and in 10 per cent. more the sterility was the result of gonorrheal infection of the wife by the husband. In Pincus' practice he found permanent azoospermia in 12.5 per cent. of 488 cases in which both husband and wife were examined to determine the cause of the absence of conception. In 7.5 per cent. there was permanent oligospermia with spermatozoa with feeble vitality, and in 2.6 per cent. there was necrospermia, and impotency in 1.4 per cent.—a total of 119 cases, or 24.4 per cent., in which the husband was responsible for the sterility. In 77 cases, or 15 per cent., the sterility was the result of gonorrheal affections of the adnexa, and the husband was thus indirectly responsible. He found myoma in 16 cases, ovarian cysts in 2, retroversion of the uterus in 19, non-gonorrheal inflammatory conditions around the uterus in 23, and fungoid endometritis in 11—a total of 71 cases, or 14.5 per cent. In 221 cases, or 45.3 per cent., there were anomalies in development, acquired atrophy or other morbid conditions. Pincus discusses further whether or not to inform the parties of the true facts of the case when the diagnosis is finally assured. He prefers to have the husband tell the wife, but insists that, as a rule, both parties must be told the real state of affairs.

74. **Phlebectasia and Its Consequences.**—Falk reviews the history, anatomy and treatment of dilatation of the veins in women, describing a case in which a thrombus developed in the left labium, without preceding phlebectasia or trauma, in an anemic woman seven months pregnant; hemoglobin 25 per cent. The pain was intense, and the tumor, the size of a hen's egg, was extirpated. Nine days later a similar tumor developed in the other right labium, also requiring removal. Under a course of iron the patient was normally delivered at term. The discovery of spots and patches of blood on the new-born child has frequently led to the findings of a ruptured vein in the vagina. Brunet has recently reported a case in which a young primipara had hemorrhage a month before term, the entire anterior vaginal wall protruding, with blue knots of veins gleaming through the mucosa and blood escaping from two small holes. It proved impossible to arrest the hemorrhage with clamps or tamponade, and the patient would undoubtedly have bled to death if she had not been delivered at once by Cesarean section. The veins of the broad ligaments were found transformed into varices as thick as one's thumb. Mechanical factors are not solely responsible for the phlebectasia of pregnancy, but anomalies in nourishment and inherited anomalies in the vessel walls certainly contribute their share. Veit and others have reported a few cases of hematoma of the vulva occurring, without the action of trauma, in non-pregnant women, and Falk has encountered a similar case. He also reports a case of varix formation throughout the entire cervix, transforming it into a hemorrhagic, sponge-like, telangiectatic tumor, in a iii-para four months after the last childbirth. Phlebectasia in the broad ligaments is comparatively frequent, he states, and it has been likened to varicocele in men. The hematocele around or back of the uterus recurring after menstruation in some women is probably merely the varicose enlargement of the utero-ovarian plexus. A tumor in the left pelvis recurred in Richet's case just preceding the menses, but it subsided under rest in bed and cold applications. Falk had a patient who complained of pains in the left abdomen between the menses. She was a primipara of 28 who had suffered from dysmenorrhea until her pregnancy, two years before. A tender tumor was found in the left adnexa before each menstrual period, but it vanished afterward. Treatment with rest in bed, compresses, ichthyol tampons and mud baths failed to give relief, and the pain became so severe that the patient was unable to walk. Hysteria and gonorrhea could be excluded. After a year's deliberation a laparotomy was done. The adnexa were sound, but a thick network of dilated veins was seen in the broad ligament. The phlebectasia was excised and the patient was permanently freed from all disturbances. In Calais' experience the adnexa were always pathologic when the broad ligament was the seat of phlebectasia.

75. **Osteomalacia.**—Seeligmann reports the after-histories of several patients with osteomalacia treated by castration from 3 to 14 years ago. His experience suggests that there are two varieties of osteomalacia, the ovarian and the senile and presenile variety due to marasmus. The bones of the pelvis are affected mostly, and early in the ovarian form; and castration is liable to produce a permanent cure. In the other variety the bones of the pelvis are little changed, while the femur shows the most characteristic alterations, the pelvis being almost the last part of the skeleton to show the effects of the process. Poverty of the blood is the main factor in the affection, he thinks, and tonics are required in every case, with castration as the last resort in the ovarian form. He found extension very useful in the treatment after castration. The atrophy of the ovaries induced by Roentgen exposures might be utilized, he thinks, in treatment when removal of these organs is contraindicated by the general condition of the patient. In conclusion, he suggests that the ovarian form of osteomalacia might be successfully treated with the serum of ovariotomized animals, analogous to the treatment of exophthalmic goiter with the serum of thyroidectomized animals. (See abstract 113 below.)

76. **Quinin as an Oxytoxic.**—Conitzer used quinin in 66 cases and states that when it acts at all it seems to be more effectual than any other drug of which he has knowledge.

77. **Ovariotomy During Pregnancy.**—Flatau tabulates the details of 281 cases and adds 11 from his own experience. Abortion followed the ovariotomy in 42 out of a total of 277 cases, that is, in 15.1 per cent., but in many of these the abortion was the result of other causes rather than of the ovariotomy, as, for instance, when the ovary was found cancerous or the seat of dermoid cysts which seem to exert a specially unfavorable influence on the fetus and peritoneum. Unusually numerous and solid adhesions were encountered in a number of the cases. Omission of these leaves a percentage of abortion in only 10.3 per cent. of the total 277 cases, while the average of abortions under expectant treatment of ovar-

ian neoplasms is said to be about 17 per cent. The month of the pregnancy does not seem to affect the percentage of abortions. His material indicates further that anterior colpotomy is the most serious in respect to the pregnancy. He warns against raising the pelvis, as this procedure is liable to affect the pregnant uterus unfavorably, and insists that each vessel must be ligated separately and that the anesthetic should be chosen which induces the least tendency to vomiting and coughing.

78. **Imaginary Pregnancy and Missed Abortion.**—Nassauer calls attention to the fact that missed abortion seems to occur exclusively in women who have borne children. He thinks it probable that the trouble is in the innervation of the uterus—the absence of the excitation to contract being responsible for the lack of expulsion of the dead fetus. When this excitation is supplied from without by examination of the uterus or introduction of a sound, then the uterus responds with exceptionally violent labor and the rapid expulsion of the fetus. There is probably some underlying cause, he remarks, not only for imaginary pregnancies, but for other conditions which the physician classes as "imaginary," including even hysteria.

79. **Pyelitis in Pregnancy.**—Mirabeau describes ten cases of pyelitis and asserts that pyelitis in pregnancy may be due to gonorrheal or tuberculous infection or to infection with pus cocci or colon bacilli. Pregnancy, he states, alters the relations of parts of the urinary apparatus to neighboring structures, and the accompanying inflammation of the bladder mucosa disturbs the urinary flow, backing the urine into the kidney and thus altering its chemical character. He ascribes the more frequent involvement of the right kidney to pressure from the ascending colon, with resulting displacement, and states that in certain conditions colon bacilli may penetrate the wall of the intestine and find their way into the kidney. While acid urine, he states, is unfavorable for the development of the gonococcus, the conditions in pregnancy favor its growth, and cystitis is likely to result, with extension of the inflammation to the kidney. The symptoms may simulate appendicitis or pelvic peritonitis. The acute stage soon subsides, but may recur. After delivery the symptoms usually subside rapidly, but salpingitis may follow. Suppurative pyelitis is secondary to suppuration elsewhere, and is marked by sudden onset and localized pains in the lumbar region. Pyuria occurs within two or three days, and with the evacuation of the pus the patient's condition improves. Infection with the colon bacillus is manifested by stormy onset with the usual symptoms of sepsis, and the local symptoms suggestive of renal calculus or gallstones. In a few days pure cultures of the colon bacillus may be made from the urine. Abortion may occur, or delivery become necessary, after which recovery ensues, although the bacteriuria may persist for some time. Pregnancy aggravates renal tuberculosis. Mirabeau advocates the usual treatment for pyelitis complicating pregnancy. After delivery the primary cause should be looked after carefully because otherwise the pyelitis is likely to recur during later pregnancies.

80. **Treatment of Exudates in the Pelvis.**—Cohn reviews the experiences at Giessen in fifty-eight cases of exudate in the pelvis. No operative measures were applied in twenty-three cases, and the exudate became absorbed under hot douches and sitz baths and hydrotherapeutic packs, supplemented by energetic sweating in electric light and vapor baths. Even before the exudate was absorbed the general health showed marked improvement under these measures, some of the patients considering themselves subjectively cured, although the exudate still persisted. The benefit proved permanent.

81. **Intracranial Hemorrhage and Mechanical Injury of the Brain in the New-Born Infant.**—Seitz reports nineteen cases from his own experience, his conclusions being that the prognosis is unfavorable when convulsions and general signs of pressure on the brain indicate deep traumatic lesion of the brain substance or extensive extravasation of blood. Only 4 infants survived out of 18 in this group, and one of these has since died and another has nystagmus, athetosis and is a probable imbecile. The new-born infant with an intracranial hemorrhage is remarkably restless, screaming constantly, moving its hands, refusing the breast or dropping it at once, and vomiting. The skin is remarkably pale, even livid. Unusual tension in the fontanelles gives the clue to the diagnosis. By the third day at latest and generally during the first and second day, the child lies in a stupor, the breathing is rapid and shallow or deep and slow, the pulse is hard and sometimes slow, and tonic and clonic convulsions develop. No paralysis is observed at first. Treatment should be avoidance of all irritation; the use of an incubator is advisable. If feeding is deemed necessary it should be by a soft stomach sound to avoid danger of aspiration pneumonia. Lumbar puncture seems theoretically indicated and should not be neglected in diagnosis. He discusses the prospects for operative intervention and reports a case in which he made an extensive opening on account of cerebral hemorrhage. The child succumbed in 10 hours to a concomitant cerebellar hemorrhage.

84. **Experiences with Instrumental Dilatation.**—Weber found instrumental dilatation a great help in a number of cases requiring immediate delivery, especially in 16 cases of eclampsia. It renders Cesarean section unnecessary, as also incision of the cervix, and the woman is delivered in from 5 to 60 minutes. In some cases he used the dilator merely as a preliminary to the metreurynter. There is always danger that the cervix may tear with instrumental dilatation.

Archiv f. Kinderheilkunde, Stuttgart.

XLVI, Nos. 3-6, pp. 161-484. Last indexed, July 20, p. 284.

89 Importance of Colostrum. M. Hohlfeld.
90 *Pneumococcus Peritonitis in Children. A. v. Koos.
91 Epilepsy and Epileptoid Conditions in Children. G. Aschaffenburg.
92 Experimental Tests of Peptic Energy of Gastric Juice at Various Temperatures, and Its Importance for Infant Feeding. (Peptische Kraft des Magensaftes.) H. Roeder.
93 Presence in Blood of a Hemophilous Bacillus in Measles. (Hämoph. Bac. im Blut Masernkranker.) C. Giarré and Carlini
94 Albuminuria in the New-born Infant. (Alb. der Neugeborenen.) N. Gundobin.
95 Cystic Echinococcus Affections in Children. (Klinisch-geographische Skizze.) H. Klose.
96 Examination of Healthy Children, from 7 to 15, with the Sphygmograph and Tonometer. (Sphygmographie und Tonometrie bei gesunden Kindern.) P. P. Eminet.
97 Influence of Out-door Life on Pulse and Blood Pressure of Children. (Einfluss der Muskelübungen und des Aufenthalts in den Sommerschulkolonien.) Id.
98 Results of Precipitin Test with New-born Rabbits. (Präcipitation bei neugeb. Kaninchen.) A. Schkarin.

90. **Pneumococcus Peritonitis in Children.**—This affection begins suddenly with violent abdominal pain, high fever and vomiting. Watery, odorless stools are a less frequent symptom, and constipation was noted in one of the 3 cases reported by von Roos. In 10 of the 68 cases on record the stools were normal or the children were constipated, and diarrhea was noted in 41. Herpes labialis is an early sign of the affection. The encapsulated process sometimes breaks its way spontaneously through the umbilicus or vagina, but it is generally necessary to make an outlet for it. After the stormy onset the symptoms subside as the fluid accumulates in the abdomen. The pains may simulate appendicitis, but there is no rigidity of the abdominal wall. The spleen is not enlarged, the temperature is remittent, and there are bronchitic murmurs at first. During the second stage the encapsulated process may simulate tuberculous peritonitis. The prognosis of the encapsulated form is good, but general suppurative pneumococcus peritonitis proved fatal in 14 out of the 18 cases known, that is, in 77 per cent. Operative treatment should be delayed until there is distinct fluctuation, as the results have been almost invariably bad when the operation was done too early.

Centralblatt f. Chirurgie, Leipsic.

August 3, XXXIV, No. 31.

99 The Route Through the Mesocolon. (Cholecystojejunostomia, Gastroenterostomia transmesocolica.) Lotheissen.
100 Improved Forceps with Hooked Blades. (Hakenpinzette.) H. Hans.
101 Transactions of XXXVI Surgical Congress, 1907.

August 10, No. 32.

102 *Nail Method of Extension in Treatment of Fractures. (Nagelextension.) F. Steinmann.
103 Longitudinal Incision for Ligature of Subclavian Artery Above Clavicle. (Unterbindung der Art. subcl. mittels Längschnittes.) Riedel.
104 Anatomic Basis for High Shoulder. (Schulterblatthochstand.) M. Cohn.

105 Truss to Hold Drain Tube for Gastric Fistula. (Pelotte bei Magenfisteln.) M. Hartleib.

August 17, No. 33.

106 *Restorative Action of Suprarenal Extract in Severe, Acute Heart Failure. (Analeptische Wirkung des Nebennierenextraktes bei Herzkollaps.) R. Kothe.

107 *Sugar in Treatment of Recent Wounds . (Frische Wunden.) G. Meyer.

108 Technic of Cardiolysis. Blauel.

August 24, No. 34.

109 Suppurative Infectious Processes of Hand and Forearm. (Eitrige Inf.-Proz. der Hand und des Unterarms.) A. B. Kanavel.

110 Treatment After Removal of Mammary Cancer. (Nachbehandlung.) A. Schlesinger.

111 Scientific Orthopedic Last for Shoes. (Schuhleisten.) K. Lengfellner.

102. Nail Extension Treatment of Fractures.—Steinmann regards extension as the only means to correct dislocation and permanent elastic retraction of the muscles unless the knife is used. Most methods of extension, however, compel absolute rest of the fractured limb or there is too much pressure on parts of the limb or the traction is not strong enough. He thinks that he has simplified the technic and rendered it more practical by the use of two sharp, slender, nickeled steel nails, from 6 to 8 cm. long, with a broad head. In case of fracture of the shaft of the femur he drives these nails into the lower end of the femur through the soft parts into the condyle, at the upper margin of the condyle, with the nails pointing downward to the epicondyle of the opposite side. The heads project about 1 cm. above the skin, and traction is made on the nails at this point for the extension. The head of the nails can be made with a groove to hold the wire for the extension, or a special double hook can be placed on the projecting nail to hold the wire and to prevent it slipping down against the tissues. These nails take the place of Bardenheuer's adhesive plaster dressings to support the weights. Traction from the weights causes absolutely no pain, he asserts, when extension is applied to these nails, and all danger of decubitus, eczema, etc., is avoided, while the entire limb below the nails is left free and can be exercised. The nails loosen in time so that they can be easily pulled out. This loosening makes it necessary to drive the nails in a slanting direction. The more compact the bone, the less of this loosening, but the nails will not penetrate very compact bone. In case of fracture of the leg he drives the nails into the upper margin of the malleolus. The nail method does not require such constant supervision as other technics for extension with fractures, as there is no interference with the circulation.

106. Restorative Action of Suprarenal Extract in Sudden Heart Failure.—Kothe reports the success of intravenous injection of a suprarenal extract in two threatening cases of suspension of respiration and heart action during spinal anesthesia. All other means had failed to relieve and in both cases the effect was evident in ten seconds after the injection. He warns against the measure in pathologic conditions in the heart, but otherwise regards it as liable to be of life-saving import in case of acute heart failure.

107. Sugar in Treatment of Recent Wounds.—For two years Meyer has been using granulated sugar as a dressing for wounds. He heats the unblued sugar slowly in a well-ventilated hot-air apparatus to 140 C. and then mixes 2 gm. salicylic acid with each 100 gm. of the sugar. (Sugar does not fuse under 160 C.) Gauze applied above does not stick, and the sugar is readily washed off. The absence of pain and irritation demonstrates, he thinks, that the sugar is an efficient protection against invasion of the wound by germs, owing to the vigorous drying out of the wound. For this reason, however, the method is not applicable, he states, for suppurating or granulating wounds, its sphere being for recent wounds before granulation sets in.

Centralblatt f. Gynäkologie, Leipsic.

August 24, XXXI, No. 34.

112 Operations Leaving Large Defects in Peritoneum. (Grosse Bauchfellverluste. T. v. Wenczel.

113 *Recovery in Severe Case of Osteomalacia Under Injection of Suprarenal Extract. (Osteomalakie geheilt mit den Adrenalineinspritzungen nach der Methode Bossi.) D. Tanturri.

113.—Bossi's announcements in regard to the specific action of suprarenal extract in osteomalacia were summarized in THE JOURNAL, April 20, 1907, page 1386.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

August 22, XXXIII, No. 34, pp. 1361-1400.

114 Arsenic Acid a Specific for Experimental Nagana. (Heilung der exp. Tsetsekrankheit.) F. Loeffler and K. Rühs.

115 Disinfectant Spray for the Hands. (Chirosoter.) Klapp and Dönitz.

116 *Alkalies in Treatment of Postoperative Intestinal Disturbances. (Postop. Darmstörungen.) Heile.

117 Operative Treatment in 3 Cases of Typhoid Perforation and Peritonitis. M. Kaehler.

118 Progress in Diagnosis of Nervous Affections. (Diagnostik der Nervenkrankheiten.) L. W. Weber.

119 *To Ensure Removal of All Compresses After Abdominal Operations. (Zurücklassen von Kompressen.) Wederhake.

120 The Medical Corps of the United States Army. (Militärsanitätswesen in den V. S. von Nordamerika.) A. C. Girard.

116. Postoperative Intestinal Disturbances.—Heile presents evidence to sustain his assertion that the real reason for the sluggish action or paralysis of the intestines after operations is a lack of alkali. When the acid in the intestines ceases to be neutralized by alkaline elements, the acids have an irritating action on the intestinal walls and catarrhal conditions result. The intestinal content as it passes from the small into the large intestine always exhibits an alkaline reaction in man and in the dog. The amount of alkali depends on the amount ingested and the amount of intestinal juice secreted. When the alkali ingested is not sufficient to keep up the balance while the intestinal juice is lost in diarrhea, the organism suffers from alkali poverty, and it is of the utmost importance to supply the alkali in sufficient amounts. In all cases of chronic inanition Heile declares that the urine should be examined for diacetic acid and acetone and the history studied for previous diarrhea. In such cases it must be borne in mind that the patient may suffer severely or succumb in coma from lack of alkali in case of an operation on the digestive tract. Such patients should be fed with carbohydrates, and sodium bicarbonate should be given in various ways, even by intravenous injection of a 3 to 10 per cent. solution. He describes some cases in which vigorous treatment with alkalies saved the apparently doomed patient. One patient operated on for suppurative peritonitis following inflammation of the cecum was already in coma from postoperative ileus followed by profuse diarrhea. Opium treatment of the diarrhea and administration of from 12 to 15 gm. (225 grains) of sodium citrate daily arrested the diarrhea and prompt recovery followed.

119. To Avoid Leaving Compresses in Abdomen.—Wederhake uses a square yard of gauze cut nearly into quarters, a small circle in the center of the square being left untouched. By this means the four quarters into which the gauze is cut are left attached to each other in the center. The square can be cut up to the center again from the four corners of the square, if desired, thus cutting it into eighths, all the parts united at the center, and the square can be of several thicknesses of gauze. He then uses these quarters and eighths as separate compresses, and finds them as convenient as if all were really separate. When ready to suture the abdomen, the entire set of compresses is lifted up together, not requiring any counting.

Jahrbuch f. Kinderheilkunde, Berlin.

June, LXV, No. 6, pp. 645-800.

121 *12 Cases of Adhesive Pericarditis in Children. (Obliterierende Herzbeutelentzündung.) M. Kob.

122 Pylorospasm in Infants and Its Congenital Features. (Säuglings-Pylorospasmus.) W. Wernstedt.

123 *Childhood from the Medical Standpoint. (Eigentümlichkeiten des Kindesalters.) N. Gundobin.

124 *Psychic and Association Secretion of Gastric Juice. (Magensaftsekretion.) H. Bogen.

Supplement, pp. 1-299.

125 Arrangements in New Children's Hospital at Vienna. (Isolierung und Kontaktverhütung in Kinderspitälen.) T. Escherich.

126 *Absorption of Albumin in Food. (Eiweissresorption bei der Ernährung.) F. Hamburger.

127 Streptococcus Enteritis and Its Complications. L. Jehle.

128 *Leukemia in Children. Chloroma. (Leukämie des Kindesalters.) E. Benjamin and E. Sluka.

129 Experimental-Clinical Study of Hemorrhage from the Skin in Children. (Hautblutungen.) A. F. Hecht.

130 *The Sequelæ of Scarlet Fever. (Nachkrankheiten des Scharlach.) B. Schick.

131 Behavior of Leucocytes in Serum Disease. (Leukozyten bei der Serumkrankheit.) B. Bienenfeld.

132 Etiology of Arteriosclerosis in the Young. (Arteriosklerose bei einem 13-jährigen Mädchen.) E. Rach.

133 Hydrotherapy in Measles. (Wirkung hydriatischer Prozeduren bei masernkranken Kindern.) A. F. Hecht.

121. **Adhesive Pericarditis in Children.**—Kob warns that chorea and acute articular rheumatism must be treated with the utmost care from the beginning. Every oversight or negligence during convalescence may avenge itself most ruthlessly, and tonic and strengthening after-treatment is of the utmost importance. Brauer's cardiolysis, he declares, is adapted only for cases of adherent pericarditis with much retraction of the chest wall, and offers scant prospects in children, owing to the progressive tendency of the pericarditis.

123. **Childhood from the Standpoint of the Physician.**—Gundobin declares that pediatrics is still in its infancy, and that better knowledge of it will throw light on many of the problems of medicine in general. He emphasizes the law that the growth of an organ is seldom paralleled by the development of its function. The liver, for example, attains a large size in the first three years of life, but its microscopic structure does not resemble that of the adult until toward the eighth year. In infancy the spleen may be affected with some chronic interstitial process, checking the development of its cellular elements, although the organ continues to grow in size and weight. The consequences of imperfect functioning of the spleen may not become apparent until some infectious disease occurs, possibly not until adult life. Inflammatory processes in the kidneys may impair their functional development, although they may present a normal appearance. Not only the etiology of certain chronic affections in adults, but also the explanation of various individual peculiarities in the course of the affection, are and remain a mystery, he declares, because physicians are blind to the importance of the study of pediatrics. Another general law is that too rapid growth may be accompanied by general morbid phenomena, and that acute diseases may accelerate growth. The study of all conditions that may influence the energy of growth is indispensable for the pediatrist. During periods of accelerated growth the organ involved or the general organism is least resistant to injurious influences. During early infancy and during puberty the organism is growing exceptionally fast. The greater or less use made of the rapidly growing organ has also an influence on its morbidity. Great demands are made on the digestive organs during early infancy, and it is very rare, he states, that an infant entirely escapes some stomach or bowel trouble, even with the most scrupulous hygienic care. The physician should learn whether or not the physical development of the child corresponds to its age; also, what period of growth the various organs have reached at the time, and what danger the present disease offers not only for the life of the child, but for the further development of its various organs. Children's tissues are peculiarly rich in cellular elements and fluid parts. This explains the preponderance of parenchymatous pathologic processes in the child's organs, and the tendency to hemorrhage in acute inflammatory processes. Chronic interstitial processes, on the other hand, are rare, Gundobin says, as there is comparatively little connective tissue, and as such processes require long-continued action of the causal agent. When they do occur, they have a disturbing action on the future functioning of the organ. Another point to be borne in mind is that the exceptionally active metabolism in children favors the distribution of an injurious agent throughout the body. His researches, he asserts, have shown that a child may be born with various acute disease processes in the internal organs. This explains the stillbirths and the cases of "congenital debility." He pleads for more extensive study of new-born infants and nurslings as a basis for better knowledge of intrauterine conditions and of the child later, emphasizing the fact that the child is not a small creature, but the future man.

124. **Psychic and Association Secretion of Gastric Juice.**—The experiments were made on a child with a gastric fistula and showed that secretion of gastric juice followed when the food was eaten and swallowed, but did not reach the stomach. While the child was being fed a toy trumpet was blown and in later tests the sound of the trumpet note alone, without food, caused the secretion of gastric juice.

126. **Absorption of Albumin in Food.**—Hamburger's experiments confirm those of others in regard to the absorption of albumin by the digestive tract of new-born infants and animals, but only in minimal proportions. The absorption of even a small amount of heterologous serum, as in cow's milk, may be directly injurious to the infant organism.

128. **Chloroma and Leukemia in Children.**—Benjamin and Sluka tabulate the details of 45 cases of chloroma which they have collected and report another case in a boy of 4 which they state is the first reported by a pediatrist, although the patients were children in 50 per cent. of the cases on record. Under Roentgen treatment the tumors retrogressed, but the fatal termination in the severe acute case could not be postponed. In a second article on leukemia in children they tabulate the details of 60 cases, omitting 100 others in which full particulars were not given. They have found 5 cases of lymphatic and 5 of myeloid leukemia in infants, and 35 of acute lymphatic leukemia in children, and 2 of the acute myeloid form and 8 of the chronic myeloid form. The lymphoid form always ran an acute course. The average age of the patient was 7 years, while the average age for the myeloid form was 10. They describe the clinical picture of a number of cases in their own experience. Roentgen treatment shows a remarkable difference in its effects in the lymphoid and the myeloid cases. In the personal case and in 4 in the literature, the course of the acute lymphatic leukemia was not prolonged under Roentgen treatment, but after a few days of latency the number of leucocytes suddenly dropped to normal or subnormal figures. During this period there may be cutaneous hemorrhages, with a certain euphoria; the glands, spleen and liver may shrink in size and the blood may return to its normal percentages, but all this does not prevent the regular, fatal termination of the affection, the leucocytes running up again to fabulous figures and the glands swelling. The results in myeloid leukemia, they state, are much more encouraging—this may be due to its more chronic form. Even when the patient seems to have entirely recovered under Roentgen treatment, the symptoms may return in an aggravated form. Flesch has reported a case in which the myeloid picture became suddenly typically lymphemic, after two and a half months of Roentgen treatment, and death soon followed.

130. **Theory of Post-Scarlatinal Affections.**—Schick reports a number of cases to show that post-scarlatinal nephritis and lymphadenitis never develop before the twelfth day and may not appear until the sixth week, the average being in the third and fourth week of the disease. They usually come on together, although the adenitis may appear alone. He has also observed a number of cases in which there was a period of remittent fever of sudden onset and of undiscoverable cause, at corresponding periods; also endocarditis, rheumatic affections and relapses of the scarlet fever or scarlatinal sore throat—all occurring at about the same interval after the first symptoms of the disease, almost always in the third or fourth week. He believes that the primary agent of the scarlet fever is checked in its proliferation in the course of the self-limited disease, but that, after a time, the organism becomes less resistant or ultra-susceptible, so that the primary agent still lurking in the tissues is able to commence to proliferate anew, causing a new series of symptoms of infectious or toxic nature, or there may be reinfection from without. By the end of the second week, in scarlet fever, a period of specific predisposition for post-scarlatinal affections sets in, which lasts up to the seventh week. The greatest tendency to the flaring up of the scarlatinal process is displayed in the third and fourth week, after which it rapidly subsides. A similar period of ultra-susceptibility has been noticed in typhoid fever and also in serum disease.

Münchener medizinische Wochenschrift.

July 9, LIV, No. 28, pp. 1361-1416.

134 *Diagnosis and Operative Treatment of Tumors in Spinal Membranes. (Rückenmarkshauttumoren.) F. Schultze.
135 Frambesia and the Spirochæta pertenuis. W. Schüffner.
136 Publotomy: Indications and Technic. (Hebosteotomie.) M. Henkel.
137 Concurrent Action of Antibodies. (Konkurrenz der Antikörper.) E. Brezina.
138 *Elimination of Endogenic Uric Acid in Attacks of Gout. (Harnsäure im Gichtanfall.) F. Soetbeer.
139 *Formula for Inhalations to Abort Asthma. (Asthma-Inhalationsmittel.) F. Schaefer.
140 Thiosinamin in Treatment of Dupuytren's Contracture. Langemak.

141 Experimental Study of Deep Action of Light. (Biolog. Tiefenwirkung des Lichtes der med. Quarzlampe und des Finsenapparates.) P. Wichmann.
142 Bier's Passive Hyperemia and Seasickness. (Stauung und Seekrankheit.) Schlaeger.

July 16, No. 29, pp. 1417-1464.

143 Constipating Action of Morphin. (Stopfende Wirkung des Morph.) R. Magnus.
144 Present Status of Roentgen Diagnosis of Gastrointestinal Affections. (Röntgendiagnostik bei Magen-Darmkrankheiten.) Jollasse.
145 Action of Sodium Taurocholate and of Bile on the Pneumococcus and Streptococcus. (Wirkung von taurocholsaurem Natrium and tierischer Galle, etc.) M. Mandelbaum.
146 Results of Pessary Treatment. M. Schwab.
147 Comparative Therapeutic Attempts in Rachitis. P. Sittler.

July 23, No. 30, pp. 1465-1512.

148 Indications and Technic for Pelvis-Enlarging Operations. (Beckenerweiterende Op.) Menge.
149 *Serum Diagnosis of Syphilis, Tabes and Paralysis. (Serologischer Luesnachweis.) F. Plaut. Id. Fornet and J. Schereschewsky.
150 *Removal of Appendix in Gynecologic Operations. (Warum muss bei gyn. Op. der Wurmfortsatz mit enfernt werden?) Pankow.
151 Importance of the Auricle for the Hearing. (Ohrmuschel und Hören.) Geigel.
152 *Operation for Rectal Cancer. (Mastdarmkarzinom.) F. Berndt.
153 Tests of Buchner's Albuminometer. (B. Eiweissbestimmung im Harn.) W. Engels.
154 Physical Examination of Swimmers. (Unt. an Schwimmern.) R. Klenböck.

July 30, No. 31, pp. 1513-1568.

155 Treatment of Congenital Debility. (Lebensschwäche.) M. Pfaundler. (Concluded.)
156 *Diagnosis of Urogenital Tuberculosis. Rolly.
157 Urinal for Male Infants. (Harnfänger.) E. Teuffel.
158 Alexin Test in the Clinic. (Getrennte Alexin-Zwischenkörperbestimmung). E. Moro.
159 *Vicarious Respiration. Geigel.
160 Detection of Simulation of Deafness. (Einblick in das wirklich vorhandene Gehör.) R. Dölger.
161 *Gonorrhea Statistics. (Tripperstatistik.) W. Erb.
162 Hot Air in Treatment of Chilblains. (Frostbeulen.) Hornung.
163 Tercentennial of Giessen University. A. Jesionek.

134. **Tumors of Spinal Meninges.**—Schultze reports a case in which an extradural fibromyoma was successfully located and removed. The case was distinguished by the absence of the usual local tenderness and radiating neuralgia pains, and by the presence of girdle paresthesia. The paralytic symptoms were aggravated when the patient lay face downward. In another case the expected tumor was not found and the process proved to be tuberculous. In conclusion, he tabulates the details of 18 cases of non-malignant tumors of the spinal membranes. No operation was attempted in 3 cases, and the tumor was not found in 4; but 6 of the patients were cured by the removal of the tumor and another was greatly improved.

138. **Elimination of Uric Acid in Gout.**—Soetbeer found that ingestion of meat did not influence the elimination of uric acid in a certain gouty patient so much as in a healthy person, but that the elimination of uric acid reached an exceptionally high figure during an attack of gout, even when no meat had been ingested for a long time.

139. **Inhalations for Asthma.**—Schaefer has witnessed great symptomatic benefit in asthma from deep inhalation of a spray from a solution of 1.028 per cent. cocain nitrite and 0.581 per cent. of atropin nitrite in 32.16 per cent. glycerin and 66.23 per cent. water. He has found that it will effectually abort an attack if used at the first symptoms.

149. **Serodiagnosis of Syphilis, Tabes and General Paralysis.**—Fornet announces that serum from patients with general paralysis and tabes gave a positive precipitin reaction with serum taken from syphilitic patients and exclusively with this serum, and the reverse was also observed. The same exclusive positive reaction with serum from different stages of the same disease was obtained also in scarlet fever, measles and typhoid.

150. **Removal of Appendix in Gynecologic Operations.**—Pankow emphasizes the fact that in many cases in which pain is ascribed to the ovaries, the trouble is in reality the result of an acute appendicitis. His experience, he declares, has been that the appendix is inflamed in fully 60 per cent. of all women, even as early as puberty, and that it is responsible for gynecologic affections to an extent hitherto unrealized.

152. **Removal of Rectal Cancer**—Berndt suggests an operation in two sittings. At the first operation the anus is closed, then an incision is made along the left margin of the coccyx and sacrum down to the rectum and the wound is tamponed, then, through an abdominal incision, the rectum is mobilized and pushed out through the rear incision, the peritoneum being sutured carefully together over the intestine, the bladder reflection of the peritoneum or the uterus and broad ligament being drawn into the suture. The abdomen is then to be sutured and the exposed rectum is wrapped in gauze until there is demarcation of the gangrenous part, when it is excised, and the sigmoid flexure drawn down to the anus. He has had no clinical experience with this technic, but thinks that it would materially reduce the danger of such operations.

156. **Diagnosis of Urogenital Tuberculosis.**—Rolly remarks that the main point in diagnosis is to think of the possibility of a tuberculous affection. Certainty is obtained only by inoculation of animals with bacilli found in the urine or other excretions.

159. **Vicarious Respiration.**—Geigel applies this term to compensatory action of the sound lung when one lung is partially or wholly disabled.

161. **Prevalence of Gonorrhea.**—Erb states that further experience has confirmed his previous figures, gonorrhea being found in 51 per cent. of his last 400 male patients of all kinds, a total of 2,400 examined. The proportion of wives suffering from the consequences of gonorrhea is even less than in his former statistics.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interest of our readers.

INSANITY AND ALLIED NEUROSES. A Practical and Clinical Manual. By George H. Savage, M.D., F.R.C.P., Late Physician and Superintendent of Bethlehem Royal Hospital, etc., with the Assistance of Edwin Goodall, M.D. (Lond.), B.S., etc.; Medical Superintendent of the Cardiff City Hospital for Mental Diseases. Cloth. Pp. 624. Illustrated. New Edition. Price, $2.75 net. Chicago: W. T. Keener & Co., 1907.

HUMAN ANATOMY, Including Structure and Development and Practical Considerations. By Thomas Dwight, M.D., LL.D., Carl A. Hamann, M.D., J. P. McMurrich, Ph.D., G. A. Piersol, M.D., Sc.D., and J. W. White, M.D., Ph.D., LL.D. Illustrated by John C. Heisler, M.D. Edited by George A. Piersol. Cloth. Pp. 2088. Price, $7.50. Philadelphia and London: J. B. Lippincott Co., 1907.

PRACTICAL DIAGNOSIS. The Use of Symptoms and Physical Signs in the Diagnosis of Disease. By Hobart Amory Hare, M.D., B.Sc., Professor of Therapeutics in the Jefferson Medical College of Philadelphia, etc. Sixth Edition, Revised and Enlarged. Illustrated. Cloth. Pp. 616. Price, $4.50. Philadelphia and New York: Lea Bros. & Co., 1907.

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